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THE

AMERICAN JOURNAL
OF THE MEDICAL SCIENCES

FOR APRIL 1856.

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THE

AMERICAN JOURNAL

OF THE

MEDICAL SCIENCES.

EDITED BY

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TO READERS AND CORRESPONDENTS.

The following works have been received:—

Medico-Chirurgical Transactions. Published by the Royal Medical and Chirurgical Society of London. Volume the Thirty-Eighth. London: Longman, Brown, Green, and Longmans, 1855. (From the Society.)

A Treatise on the Structure and Use of the Spleen: being one of three unsuccessful essays for the Astley Cooper Prize, awarded July, 1853. With additional Notes and an Appendix, containing an Exposé of the numerous Errors in the Prize Essay. By EDWARDS CRISP, M. D., late Physician to the Metropolitan Dispensary, etc. London, 1855. (From the Author.)

Guy's Hospital Reports. Edited by SAMUEL WILKS, M. D., London, Licentiate of the Royal College of Physicians, and ALFRED POLAND, Fellow of the Royal College of Surgeons, etc. Third Series, Vol. I. London: John Churchill, 1855.

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Osteological Memoirs. No. 1. The Clavicle. By JOHN STRUTHERS, M. D., Fellow of the Royal College of Surgeons of Edinburgh, Lecturer on Anatomy. Edinburgh: Sutherland & Knox, 1855. (From the Author.)

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On Bandaging and other Operations of Minor Surgery. By F. W. SARGENT, M. D. Second edition. Philadelphia: Blanchard & Lea, 1855.

An Introduction to Practical Pharmacy: designed as a Text-Book for the Student and as a Guide to the Physician and Pharmaceutist. With many Formulas and Prescriptions. By EDWARD PARRISH, Graduate in Pharmacy, Member of the Philadelphia College of Pharmacy and of the American Pharmaceutical Association, etc. etc. With two hundred and forty-three Illustrations. Philadelphia: Blanchard & Lea, 1855. (From the Publishers.)

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The Book of Prescriptions: containing 2,900 Prescriptions, collected from the Practice of the most eminent Physicians and Surgeons, English and Foreign. Comprising also a Compendious History of the Materia Medica of all Countries, alphabetically arrranged, and Lists of the Doses of all Officinal or Established Preparations. By Henry Beasley. Philadelphia: Lindsay & Blakiston, 1855.

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Clinical Lectures on the Diseases of Women and Children. By Gunning S. Bedford. A. M., M. D., Professor of Obstetrics, the Diseases of Women and Children, and Clinical Midwifery in the University of New York. Second edition. New York: S. S. & W. Wood, 1855. (From the Publishers.)

A Conspectus of the Pharmacopœias of the London, Edinburgh, and Dublin Colleges of Physicians, and of the United States Pharmacopœia: being a Practical Compendium of Materia Medica and Pharmacy. By Anthony Todd Thompson, M. D., F. L. S., Fellow of the Royal College of Physicians, etc. Seventh American edition, much enlarged and improved. Edited by Charles A. Lee, M. D., Professor of General Pathology and Materia Medica in Geneva Medical College. New York: S. S. & W. Wood, 1855. (From the Publishers.)

A Treatise on Venereal Diseases. By A. Vidal (De Cassis), Surgeon of the Venereal Hospital of Paris, etc. With Coloured Plates. Translated, with Annotations, by George C. Blackman, M. D., etc. Second edition. New York: S. S. & W. Wood, 1855. (From the Publishers.)

A Treatise on Medical Jurisprudence. By Francis Wharton, author of "A Treatise on American Criminal Law," "Precedents of Indictments," etc., and Morton Stillé, M. D., Lecturer on the Principles and Practice of Medicine in the Philadelphia Association for Medical Instruction. Philadelphia: Kay & Brother, 1855.

History of Medicine, from its Origin to the Nineteenth Century. With an Appendix, containing a Philosophical and Historical Review of Medicine to the Present Time. By P. V. Renouard, M. D. Translated from the French, by Cornelius G. Comegys, M. D., Professor of the Institutes of Medicine in the Miami Medical College, Cincinnati. 1856. (From the Translator.)

Essay on the Relation of Atomic Heat to Crystalline Form. Read before the Academy of Natural Sciences of Philadelphia, July 24, 1855. By J. Aitken Meigs, M. D. Philadelphia, 1855. (From the Author.)

Clinical Lectures on some of the Principal Diseases of the Eye. By Isidor Gluck, M. D. From the Buffalo Medical Journal. (From the Author.)

Elm Tents for the Dilatation of the Cervix Uteri. By Horatio R. Storer,

M. D., one of the Physicians to the Boston Lying-in Hospital. (From the Author.)

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Annual Report of the City Inspector of the City of New York, for the Year ending December 31, 1854. New York, 1855.

Nineteenth Annual Report of the Trustees and Superintendent of the Vermont Asylum for the Insane. August, 1855.

Second Annual Report to the Legislature of South Carolina, relating to the Registration of Births, Deaths, and Marriages, for the Year ending December 31, 1854. Columbia, S. C., 1855.

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Introductory Address delivered at the College of Physicians and Surgeons, New York, October 16, 1855. By JOHN C. DALTON, Jr., M. D., Professor of Physical and Microscopic Anatomy. New York, 1855.

Introductory Lecture to the Course of the Institutes of Medicine in the University of Pennsylvania. Delivered October 12, 1855. By SAMUEL JACKSON, M. D. Published by the Class. Philadelphia, 1855.

An Address introductory to the Course of Lectures in the St. Louis Medical College. By CHARLES A. POPE, A. M., M. D., Professor of Surgery. Published by the Class. St. Louis, 1855.

An Introductory Address delivered before the Class of the Medical Department of the University of Nashville. October 30, 1855. By JOHN M. WATSON, M. D., Professor of Obstetrics and the Diseases of Women and Children. Nashville, 1855.

An Address on the Life and Character of the late Coleman Rogers, M. D. By HENRY M. BULLITT, M. D. Delivered at the opening of the session of the Kentucky School of Medicine for 1855–'56. Louisville, 1855.

Introductory Address delivered to the Class in the Medical Department of the Iowa State University, at the opening of the course of 1855–'56. By JOHN R. ALLEN, M. D., Professor of Obstetrics and Diseases of Women and Children. Published by the Class. Keokuk, Iowa, 1855. (From the Author.)

The following Journals have been received in exchange:—

Annales Medico-Psychologiques. Par MM. les Docteurs BAILLARGER, CERISE, et MOREAU. April, July, and October, 1855.

Archives D'Ophthalmologie. Par M. A. JAMAIN. January, February, March, April, July, and August, 1855.

Le Moniteur des Hôpitaux. Redacteur en chef, M. H. DE CASTELNAU. September, October, and November, 1855.

Revue de Thérapeutique Médico-Chirurgicale. Par A. MARTIN-LAUZER. September and October, 1855.

Gazette Médicale de Paris. August, September, and October, 1855.

Revue Médico-Chirurgicale de Paris. August and September, 1855.

Annales de la Sociedad Medicinæ Montevidiana. September and November, 1854; January, March, and May, 1855.

Medical Times and Gazette. September, October, and November, 1855.

Dublin Medical Press. September, October, and November, 1855.

Edinburgh Medical Journal. September, October, and November, 1855.

Association Medical Journal. Edited by JOHN ROSE CORMACK, M.D. August, September, October, and November, 1855.

The Dublin Hospital Gazette. September, October, and November, 1855.

The Journal of Public Health and Sanitary Review: including the Transactions of the Epidemiological Society of London. Edited by BENJ. W. RICHARDSON, M. D. March, June, and September, 1855.

The British and Foreign Medico-Chirurgical Review. October, 1855.

The Journal of Psychological Medicine and Mental Pathology. Edited by FORBES WINSLOW, M. D. October, 1855.

The Glasgow Medical Journal. October, 1855.

The Dublin Quarterly Journal of Medical Science. October, 1855.

The Medical Chronicle, or Montreal Journal of Med. and Surg. Edited by W. Wright, M. D., and D. C. MacCallum, M. D. Oct., Nov., and Dec., 1855.

The New York Medical Times. Edited by H. D. Buckley, M. D. October, November, and December, 1855.

The New Orleans Medical News and Hospital Gazette. Edited by Drs. S. Choppin, C. Beard, and D. W. Bricknell. October and December, 1855.

The Southern Journal of the Medical and Physical Sciences. Edited by Drs. Jones, King, Curry, and Wood. September, 1855.

The American Medical Monthly. Edited by E. H. Parker, M. D. October, Dec., 1855.

Iowa Medical Journal. Conducted by the Faculty of the Medical Department of the Iowa University. June and July, 1855.

The Medical Reporter. Published under the direction of the Chester and Delaware County Medical Societies. October, 1855.

The Western Lancet. Edited by T. Wood, M. D. October, November, and December, 1855.

The New Orleans Medical and Surgical Journal. Edited by Bennet Dowler, M. D. November, 1855.

American Journal of Pharmacy. Edited by W. Procter, Jr. Nov., 1855.

The American Journal of Science and the Arts. Conducted by Profs. B. Silliman, B. Silliman, Jr., and J. D. Dana. November, 1855.

Charleston Medical Journal. Edited by C. Happoldt, M. D., D. J. Cain, M. D., and F. Peyre Porcher, M. D. November, 1855.

St. Louis Medical and Surgical Journal. Edited by Drs. Linton, McPheeters, Moore, and Allen. November, 1855.

Memphis Medical Recorder. Edited by A. P. Merrill, M. D. September and November, 1855.

The Medical Examiner, a Monthly Record of Medical Science. Edited by Samuel L. Hollingsworth, M. D. October, November, and December, 1855.

The Northwestern Medical and Surgical Journal. Edited by N. S. Davis, M. D., and H. A. Johnson, M. D. September, October, and November, 1855.

The Medical Counsellor. Edited by R. Hills, M. D. September, October, November, and December, 1855.

The American Medical Gazette. Edited by D. M. Reese, M. D., and C. D. Griswold, M. D. October, November, and December, 1855.

Atlanta Medical and Surgical Journal. Edited by Joseph F. Logan, M. D., and W. P. Westmoreland, M. D. September, October, November, and December, 1855.

Buffalo Medical Journal. Edited by S. B. Hunt, M. D. October, November, and December, 1855.

Nashville Journal of Medicine and Surgery. Edited by W. K. Bowling, M. D., and P. F. Eve, M. D. October, November, and December, 1855.

The American Journal of Insanity. October, 1855.

The American Journal of Dental Science. Edited by Chapin A. Harris, M. D., D. D. S., and A. S. Piggott, M. D. July and October, 1855.

The Boston Medical and Surgical Journal. Edited by Drs. Smith, Morland, and Minot. October and November, 1855.

Southern Medical and Surgical Journal. Edited by L. A. Dugas, M. D., and Henry Rossignol, M. D. October, November, and December, 1855.

The Western Journal of Medicine and Surgery. Edited by Lunsford P. Yandell, M. D. August and September, 1855.

The New Hampshire Journal of Medicine. Edited by Geo. H. Hubbard, M. D., and Charles Bell, M. D. October, November, and December, 1855.

The Virginia Medical and Surgical Journal. Edited by J. B. McCaw, M. D., J. F. Peebles, M. D., and G. A. Otis, M. D. October and November, 1855.

The New Jersey Medical Reporter. Edited by S. W. Butler, M. D. October, November, and December, 1855.

The Peninsular Journal of Medicine. Edited by A. Palmer and E. Andrews. October, November, and December, 1855.

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XIV. Transactions of Medical Societies.
1. Proceedings of the Sixty-Third Annual Convention of the Connecticut Medical Society, May, 1855. 8vo. pp. 87.
2. Transactions of the Medical Association of Southern Central New York, at the Ninth Annual Meeting, held at Elmira, June 5, 1855. 8vo. pp. 124.
3. The Transactions of the Belmont (Ohio) Medical Society, for 1854–5. 12mo. pp. 172.
4. Proceedings of the Annual Meeting, Nov., 1853., of the Medical Association of Texas. 8vo. pp. 30. - - - - - - - - - - - 143

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XVI. An Introduction to Practical Pharmacy. By Edward Parrish, Principal of the School of Practical Pharmacy, Philadelphia. With two hundred and forty-three Illustrations. Blanchard & Lea: 1856. 8vo. pp. 544. - - - - - - - - - - - - - - - 165

XVII. On Bandaging and other Operations of Minor Surgery. By F. W. Sargent, M. D., Member of the College of Physicians of Philadelphia; one of the Surgeons to Wills' Hospital, &c. &c. New edition, revised and enlarged. With one hundred and eighty-one illustrations. Philadelphia: Blanchard & Lea, 1856. 12mo. pp. 359. - - - - - 166

XVIII. A Treatise on Medical Jurisprudence. By Francis Wharton, author of "A Treatise on American Criminal Law, &c. &c.," and Moreton Stillé, M. D., Lecturer on the Principles and Practice of Medicine in the Philadelphia Association for Medical Instruction. Philadelphia: Kay & Brother, 1855. 8vo. pp. 815. - - - - - - - - - 169

XIX. Clinical Lectures on Paralysis, Diseases of the Brain, and other Affections of the Nervous System. By Robert Bentley Todd, M. D., F. R. S., Physician to King's College Hospital. 8vo. pp. 311. Philadelphia, 1855: Lindsay & Blakiston. - - - - - - - - - - - 173

XX. History of Medicine, from its Origin to the Nineteenth Century, with an Appendix, containing a Philosophical and Historical Review of Medicine to the Present time. By P. V. Renouard, M. D. "The Sciences are gradually developed. It is only by reviewing past centuries that we can determine their laws of growth." Translated from the French by Cornelius G. Comegys, M. D., Professor of the Institutes of Medicine, Miami Medical College. 8vo. pp. 719. Cincinnati, 1855. J. B. Lippincott: Philadelphia. - - - - - - - - - - - - - - 179

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XXI. Principles of Human Physiology, with their Chief Applications to Psychology, Pathology, Therapeutics, Hygiène, and Forensic Medicine. By William B. Carpenter, M. D., F. R. S., F. G. S., etc. etc. A new American from the last London edition. With two hundred and sixty-one illustrations. Edited, with additions, by Francis Gurney Smith, M. D., Professor of the Institutes of Medicine in the Medical Department of Pennsylvania College, etc. 8vo. pp. 902. Philadelphia: Blanchard & Lea, 1855. - - - - - - - - - - - - 184

XXII. History of the American Medical Association from its Organization up to January, 1855. By N. S. Davis, M. D., Professor of Principles and Practice of Medicine, and Clinical Medicine in Rush Medical College, etc. etc. etc. To which is appended Biographical Notices, with Portraits of the Presidents of the Association, and of the Author. Edited by S. W. Butler, M. D. 8vo. pp. 191. Philadelphia: Lippincott, Grambo & Co., 1855. - - - - - - - - - - - - 185

XXIII. The Obstetric Memoirs and Contributions of James Y. Simpson, M. D., F. R. S. E., Professor of Midwifery in the University of Edinburgh, etc. etc. Edited by W. O. Priestley, M. D., Edinburgh, formerly Vice-President of the Parisian Medical Society, and Horatio R. Storer, M. D., Boston, U. S., one of the Physicians of the Boston Lying-in Hospital. Members of the Medico-Chirurgical and Obstetric Societies of Edinburgh, etc. etc. etc. Vol. I. 8vo. pp. 756. Philadelphia: J. B. Lippincott & Co., 1855. - - - - - - - - - - - - 186

XXIV. Manual of the Practice of Medicine. By George Hilaro Barlow, M. A. and M. D., Cantab, Fellow of the Royal College of Physicians, Physician to Guy's Hospital, to the Magdalen Hospital, and to the Philanthropic Society. With additions by Dr. Francis Condie, M. D., author of "A Practical Treatise on the Diseases of Children, &c. &c." 8vo. pp. 608. Philadelphia: Blanchard & Lea, 1856. - - - - - - 187

XXV. Physiological Chemistry. By Prof. C. G. Lehmann. Translated from the second edition. By George E. Day, M. D., F. R. S., F. R. C. P., and Professor of Medicine in University of St. Andrews. Edited by R. E. Rogers, M. D., Professor of Chemistry in Medical Department of University of Pennsylvania. With illustrations selected from Funke's Atlas of Physiological Chemistry, and an Appendix of Plates. Complete in two vols. Philadelphia: Blanchard & Lea, 1855. Pp. 648 and 547. - - - - - - - - - - - - 188

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THE

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OF THE MEDICAL SCIENCES

FOR JANUARY 1856.

ART. I.—*Fracture of the Hyoid and Inferior Maxillary Bones, with Fracture and Dislocation of the Thyroid Cartilages, and other Injuries; Tracheotomy, &c.; Recovery.* (With three wood-cuts.) By ALBERT F. SAWYER, M. D., of San Francisco, California.

A VIGOROUS, muscular man, was at work, July 15, 1854, on a piling machine, which was carelessly overturned while he was near the top, and he fell with it to the ground, a distance of forty-five feet. The iron hammer of the machine, weighing one thousand pounds, was at the time elevated, which, of course, precipitated his descent with the most fearful violence. I saw the patient a few minutes after his fall, and, on examination, found that he had received the following injuries: The body of the lower jaw on the right side, near the symphysis, was extensively comminuted; a large triangular fragment of the maxilla was projecting through a lacerated wound of the integument externally and beneath. A piece of bone above, containing the right canine, and adjoining incisor teeth, was lost at the time the accident occurred. The left angle of the jaw was also fractured, but the separation of the fragments was incomplete. (See Fig. 1.) The extensive bruising of the left side of the head and trunk, indicated that the force of the blow had been received on this part of the body, and, as far as the maxilla was concerned, was transmitted to the opposite side, where the comminution existed, on the principle of the arch. The face was frightfully distorted, the chin being greatly displaced to the right side. The cartilages of the larynx were fractured and separated, the right overriding its fellow. On the left side, the great cornu of the os hyoides could be felt loose and detached from the body of the bone. The neck was much infiltrated with air and serum, and subcutaneous crackling was indicated to the touch over the upper portion of the chest and back. The right radius was broken transversely about three-quarters of an inch above the wrist, the lower fragment being split longitudinally into the cavity of the joint itself. The left patella was much comminuted, the detached fragments of which could be felt and moved about, beneath the integument.

The patient was found in a state of great prostration, labouring under the usual signs of concussion of the brain. He could be partially aroused by loud shouting in his ear, or on manipulation about the fractures. Pupils dilated, sluggish to the stimulus of light; respiration slow and measured, without noise; skin bathed with a cold moisture; pulse feeble, cannot be counted. I had him well covered with blankets, external heat constantly applied, and diffusable stimulants, as brandy and ammonia, administered *pro re nata*.

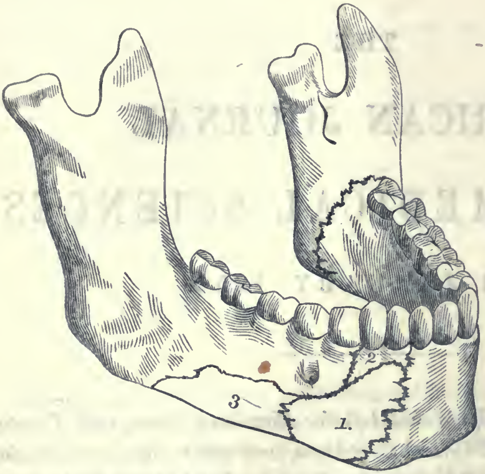


Fig. 1.

The Jaw Restored.—1. The large fragment removed at the time of the accident. 2. The piece containing the canine and incisor teeth. 3. The exfoliation subsequently removed; several smaller exfoliations were also at different times extracted from the wound.

In the course of two hours reaction began to be established, when the patient was transferred to a comfortable bed, and his fractures dressed. Several loose fragments of the maxilla were removed through the external wound, the edges of which were afterwards brought together, close dressings applied, and retained in place by a figure of 8 bandage over the cranium. The fracture of the radius was treated with simple straight splints; the left lower extremity was flexed on the pelvis, at an angle of thirty degrees, and supported in this position by an inclined plane.

Stimulants ordered through the night, and evaporating lotions for the neck, knee-joint, and the various ecchymosed portions of the body.

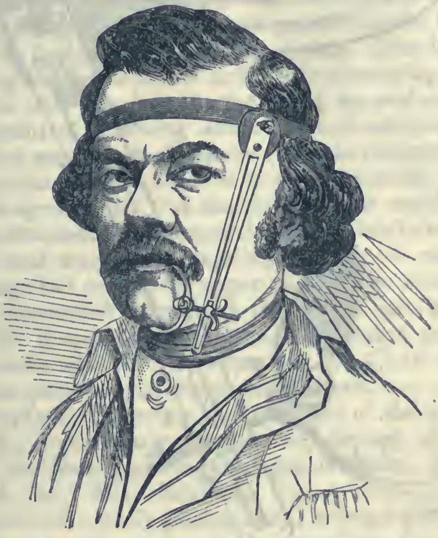
July 16. Passed a restless night; at times delirious, and inclined to strip off his dressings, followed by periods of heavy slumber; now, when aroused, talks incoherently; surface of the body cool; pupils unequal; head flushed; passes his urine copiously in bed; pulse 110, soft and feeble. Ordered black draught internally, to be followed by a turpentine enema; ice to the head, and blisters to the inner aspect of the thighs.

17*th*. General symptoms of traumatic delirium; respiration inclined to be stridulous; voice husky, and deglutition extremely difficult; bowels well evacuated by medicine; extremities quite cold. Repeat the stimulating enema; mustard to the extremities; injections of warm beef-tea.

18*th*. Patient passed a more quiet night; less congestion of the head; skin moist and warm. He appears rational this A. M., although evincing great prostration physically; wound of the jaw suppurating; patient swallows with more ease; pulse 96, full and soft.

19*th*. Rested well during the night; takes beef-tea by the mouth without difficulty, and with a relish; respiration and voice unchanged; effusion into the knee-joint subsiding. The joint is without much heat or tenderness, and patient makes no complaint of it. Great difficulty is experienced in keeping the fragments of the jaw in coaptation, on account of the comminution of the bone, with its loss of substance, and the frequent change of dressings rendered necessary by the profuse purulent discharge. A mould of the outline of the jaw externally was taken in plaster, and of the alveolar margin of the jaw with wax. Thin metallic plates were struck up from these moulds, which were accurately adjusted to the maxilla, the external one being cut away, at the site of the wound, to allow of the free escape of the pus. The lower jaw was then brought firmly against the uppers, and made secure by appropriate dressings. (See Figs. 2 and 3.) The patient has some febrile disturbance; tongue marked with a white dry centre; pulse 96, with a strong impulse; ordered gruel. ℞.—Infus. sennæ ℥iv; sulph. magnes. ℥ss. M. ft. haustus. Pul. Doveri grs. x. Hora somni sumend.

Fig. 2.

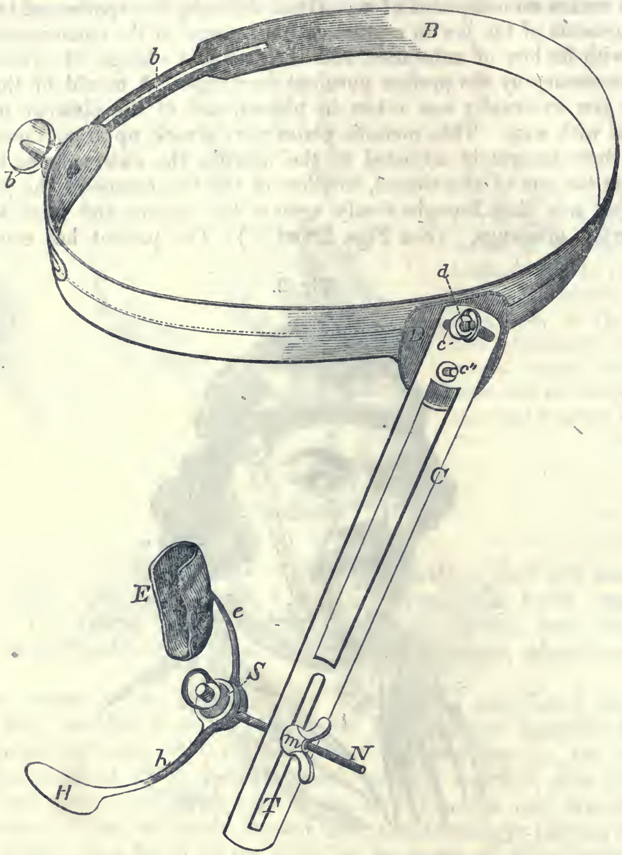


The Apparatus Applied.

20th, 8 A. M. Respiration was somewhat embarrassed during the night; now, however, less dyspnœa than during previous twelve hours; breathing apparently goes on without serious effort. Tumefaction of neck was much increased; swallows without pain, and craves food; tongue moist; skin of natural temperature; pulse 90, soft and full. Ordered hirud. vj to be applied on each side of the neck, to be followed by fomentations of hot water and spirit.

2 P. M. It was reported to me that the breathing of the patient had become extremely laboured. On arrival I found him in the last stages of asphyxia; countenance purple; eyeballs projecting; veins turgid, like whipcords; inarticulate; nearly insensible; respiration not more than three or four times a minute, and patient evidently in his death throes. Without loss of time the head was thrown backwards, to expose the anterior cervical region; an incision was made downward along the median line of the larynx about two inches in length, with the intention of opening the crico-thyroid

Fig. 3.



APPARATUS SEPARATE.—*B*, a thin ribbon of steel, 1¼ inches in width, and long enough to encircle the cranium, covered with chamois skin, with a permanent screw attached to one extremity, playing in the fenestrum *b*, to enable it to be accurately fitted and retained in place by the female screw b'. *C* is a thin plate of steel, 6 inches in length, 1¼ in width, gently tapering towards the free extremity, and stiffened by a second narrow plate, which is riveted to the first. At c' is a fenestrum describing the arc of a circle. This plate is attached to the ear-piece *D* of the strap at the pivot c''. It can be moved forward and backward within the limits of the fenestrum, and fixed at any point by the thumbscrew *d*. *E* is a thin silver cap, closing over the molar teeth and alveolar process of the jaw, made from a mould of the parts previously taken in wax. *H* is a hard pad, covered with chamois skin, and shaped to grasp the jaw externally and underneath. These are connected together by two covered steel bows, *e* and *h*, at the hinge-joint *s*. To *h* is attached a long male screw *N*, playing upward or downward, forward or backward, in the fenestrum *T* of the perpendicular plate, and fixed in any position by a nut s' and thumbscrew *m*. The entire weight of the apparatus is ℥viiss. To apply the apparatus, the head-strap is first fitted, and confined by turning the thumbscrew b', as in Fig. 2. The Plate *C* is then swung forward on the pivot c'', to bring the fenestrum *T* opposite the angle of the mouth, and fixed by the thumbscrew *d*. The silver cap is fitted over the alveolar margin of the jaw, and the pad adapted inferiorly—the arches *e* and *h* brought together at the joint *s*, their curves just avoiding the integuments of the jaw, and fixed by a thumbscrew. This portion of the apparatus embraces the jaw in a firm grasp. The jaw is then restored to its natural position by drawing it forward and outward, when the long screw *N*, attached to the joint *s*, is inserted into the fenestrum *T*, and fixed there by tightening the thumbscrew *m* upon the nut *s*, the reverse side of the plate.

membrane. The serious injuries inflicted on the laryngeal textures, as revealed in the progress of the dissection, convinced me that laryngotomy could not be safely relied upon. The original incision was continued along the median line of the neck to the top of the sternum, the trachea soon exposed, and the fourth and fifth rings divided by a longitudinal cut. The trachea occupied a deep and formidable position, as the patient had a thick muscular neck, which was also enormously tumefied as far as the thorax, from the effusion of serum, and the escape of air from the fractured larynx into the intermuscular cellular tissue. The patient had ceased to breathe before the trachea was opened. The abundant venous hemorrhage gave considerable annoyance, and I was left entirely without assistance, the nurses being occupied in controlling the wild excitement of a brother of the patient, who, not understanding the purport of the operation, had violently attempted to interfere with it. A quill, which was fortunately at hand, was passed into the trachea, and the wound stuffed with sponge to restrain the oozing. The lungs were then inflated by applying the mouth to the quill. By alternating the inflation by pressure and friction over the chest, by the use of the cold douche, &c., soon satisfactory indications of returning animation and consciousness were obtained. On the first respiratory efforts the quill was removed, and the edges of the tracheal aperture kept asunder as widely as possible, to allow a more perfect ingress and egress of air. A tracheotomy tube was inserted into the trachea as soon as obtained, and tranquil breathing finally restored. About ℥ss of coagulum and mucus was expelled through the wound and tube. After all hemorrhage had ceased, the upper part of the wound was brought together with the interrupted suture, and the patient left in a comfortable condition. 9 P. M. Respiration free through the tube; patient makes no complaint; chicken-tea allowed. ℞.—Spts. nit. eth. ʒj; tr. opii gtt. x; mist. camph. ℥ss. Hora quaque capiat donec somnis fuerit.

21*st.* Patient slept quietly during the latter part of the night; less tumefaction of the neck; respiration goes on entirely through the tube and the wound. Ordered beef-tea and porter, mucilaginous drinks. ℞.—Sul. morph. gr. $\frac{1}{5}$; mist. camph. ℥ss. Hora decubitus.

24*th.* Swelling of neck rapidly passing away; a deep-seated hardness about the larynx and upper portion of the trachea, resulting from the deposit of lymph. Patient has much improved in strength; increased inflammatory excitement about the jaw, without active constitutional symptoms; a clear mucous expectoration through the tube without effort. The dysphagia resulting from the operation has nearly subsided; pulse 85, soft and regular. Ordered a simple enema; asks for and may have the yelk of an egg, and calves' foot jelly.

28*th.* Complains of pains—not constant—at base of lungs; sonorous râles over right anterior chest; cough dry; expectoration thick, viscid, and diminished in amount; subcutaneous emphysema has disappeared; wound of the neck rapidly contracting; tongue covered with a moist gray coat; skin natural; bowels confined; pulse 80, strong and full. A small slough has separated over the fractured patella—disclosing a minute orifice of the size of a probe—evidently communicating with the cavity of the joint, and from which a few drops of synovial fluid has escaped, transforming a simple into a compound fracture. The effusion attending the primary injury has become apparently absorbed, and the joint nearly resembles its fellow. The opening was immediately covered with scraped lint and adhesive strap, and a roller applied from the foot to the groin.

Ordered gruel; black draught ℥ij. ℞.—Pul. opii c. gr. x; hora somni.

℞.—Syr. ipec. ʒi; syr. tolut. ʒiij; acid. hydrocyanic. D. gtt. i, *pro re nata*, sum.

30th. Thoracic symptoms relieved; an abundant frothy mucus expelled through the tube; patient complains of a dull ache in the knee-joint; dressings removed; some increase of fulness found with tenderness on pressure; external redness and heat; slight synovial discharge from the wound; pain in head; thirst; pulse 80, bounding. ℞.—Hirud. xij around patella, to be followed by warm fomentations. ℞.—Nit. potass. gr. v; tart. antim. et potass. gr. i; sulph. morph. gr. $\frac{1}{8}$ in quaq. tert. hor. sum.

31st. General febrile disturbance; knee-joint much swollen; an abundant sero-purulent discharge from the wound; rest much broken on account of pain; bowels freely opened; pulse 86, hard. Apply hirud. vj above and below the joint. ℞.—Pulv. Doveri gr. xv. Hora somni sum.

August 1. Less constitutional irritation; knee the same with sanious discharge. Patient rested tolerably through the night. Repeat opiate.

3d. Patient makes no complaint; tongue covered with a moist white coat, clean at edges; skin natural; asks for food; pulse 80; a healthy purulent discharge from the joint. An incision was made over inner tuberosity of tibia, and about ℥j of laudable pus evacuated. Beef-tea ordered.

5th. 3 A. M. Was informed that the patient was bleeding profusely from the jaw. Instructed the messenger how to make compression on the facial arteries, until I should be able to reach the patient. On my arrival, soon after, I found the patient exsanguine; the skin bathed with a cold moisture. The pulse could scarcely be felt at the wrist. The compression above directed had had the desired effect, and, whilst continued, had perfectly controlled the hemorrhage; on relaxing it, the bleeding was renewed again, evidently poured out from some of the branches of the right facial artery. I cut down upon the facial of this side where it turns over the margin of the jaw, placed a ligature upon it, and the hemorrhage was at once arrested. Ordered bottles of hot water externally; may have hot milk punch *ad libitum.* 4 P. M. A good reaction established; no further hemorrhage. Patient takes nourishment freely; pulse 110. The large coagulum, projecting from the wound externally and internally into the mouth, was carefully removed. The wound has a dry, glazed appearance. Continue stimulants.

6th. Patient had a refreshing sleep during the night; considerable swelling over the right side of the jaw, the integument being tense, reddened, and glistening; no suppuration from the jaw; increased vascular excitement about the knee, with a very profuse escape of sanguineous pus from the opening over the patella. Patient has a hoarse dry cough with difficult expectoration; skin of natural temperature, but dry; has a decided appetite; tongue moist; pulse 90, rather sharp. Ordered beef-tea. ℞.—Ol. ricini ℥i; ℞.—Syr. scillæ, syr. ipec., āā ʒss; muc. acac. ℥ss *pro re nata.* ℞.—Pulv. Doveri gr. x. Hor. somn. cap.

9th. Patient is mending; wound of the neck rapidly granulating about the tube; less tumefaction of jaw, and suppuration is again established. Left lower limb is much distended with serum above and below the knee. The joint is tender on pressure, but does not give patient much pain.

12th. Incision made over outer tuberosity of tibia and about ℥ij of healthy pus evacuated. Patient allowed a free diet. ℞.—Tr. cinchon. c. ʒj; ter in die. Excoriations complained of over the sacrum. Circular air-pillow (caoutchouc life preserver) applied with perfect relief to the patient.

30th. A free discharge of pus from wound made to ligate the facial artery; no febrile movement; appetite and digestion good, and the patient is in excellent spirits; pulse 80, of good volume. Fracture of radius examined this A. M. The fragments are found in good position, but only feeble efforts at repair are indicated. Dressings renewed.

September 6. An ill-defined tumour of the thigh is observed most prominent at middle of vastus externus muscle; no fluctuation; suppuration has nearly ceased at the knee. Patient has lost all desire for food; nervous system is much depressed; skin hot, dry, and harsh to the touch; bowels torpid; tongue marked with a brownish, dry coat; pulse 86, feeble. An incision was cautiously made over the prominent part of the swelling through the extensor muscle, which opened into the cavity of an abscess, evidently communicating with the joint. About ℥iv of laudable pus escaped. A pledget of lint was passed into the wound to prevent the edges from uniting. Since all close dressings on the maxilla were necessarily abandoned after ligature of the artery, the fragments have continued displaced, the chin falling over to the right side, and by their constant irritation were evidently keeping up the suppuration. The probe passed into the wound made to ligate the artery meets with denuded bone, which is undetached and extends towards the place of fracture. The apparatus figured here (see Figs. 2, and 3) was contrived to correct this displacement, at the same time not to interfere with the free discharge of matter. The principle consists in presenting an antagonistic force to the powerful muscles attached to the main body of the maxilla, especially those at and near the symphysis, which were retracting it, and acting forcibly on the free extremity of the bone, were dragging it to the opposite side. The short fragment was depressed by the mylo-hyoideus, and overlapped the body of the bone. The fracture at the left angle has become perfectly consolidated. ℞.—Sulph. quin. gr. ij. In quart. hora qua. sum.

13*th*. Patient is much emaciated; general cachexia of the system; complains of pain in the abdomen; abdomen tympanitic; tenderness over the sigmoid flexure; nervous system irritable; pulse 86, small and sharp. Patient can now wear the fracture apparatus day and night, which could be endured at first only a few minutes at a time. The fragments are retained in the most perfect position by it; and the natural contour of the face restored. The bowels are inclined to be relaxed; continue quinine; apply to abdomen turpentine stupes. ℞.—Tr. opii gtt. xv; eth. chlo. ʒss; ol. terebinth. gtt. vj; syr. zinziber. ℥ss, in quaque hor. repitend donec somn. 2 P. M. Patient has had three hours of refreshing sleep; reports himself as more comfortable; abdominal symptoms much relieved; pulse the same.

16*th*. Typhoid tendencies yielding; all functions of the body well performed; great discharge of healthy pus from the opening at the middle of the thigh, which seems to be the principal outlet for the accumulation within the cavity of the joint. The jaw splint has greatly soothed the irritation resulting from the irregular movements of the fractured bone in the surrounding textures. Suppuration has much diminished; continue quinine; may have a liberal diet with wine.

October 17. Patient is slowly convalescing; is kept debilitated from the constant suppuration connected with the knee-joint, on either side of which, occasionally, superficial deposits of pus are evacuated; he has a good appetite; sleep is uninterrupted, and he is free from all fever; circular air-pillows are found of great service in preventing sloughs, where the bony prominences of the body, which is much emaciated, come in contact with the bed; on examination of the fractured radius, firm union was found to have taken place, and all dressings were removed.

November 25. General condition of the patient the same as at last report.

The wound of the neck has nearly closed around the tube, through which respiration goes on with entire freedom; the tumefaction of the thigh, and the excitement in knee-joint is gradually yielding; the leg was bent at a small angle on the thigh to rest in a favourable position for anchylosis. An incision was made from near the angle of the jaw forward, connecting the two fistulous openings; the edges of the incision dissected up to expose the lower margin and body of the jaw, and a large exfoliation, and several smaller pieces of bone removed. Edges of wound connected by the interrupted suture. Water-dressings.

January 2. Patient has been gaining daily in flesh and strength; is now exhibiting malarious symptoms, undoubtedly owing to the locality where he is residing; he is now so far improved as to justify a removal to a more elevated and healthful location; wound of the jaw has entirely cicatrized; the knee is fast resuming a natural appearance; manipulation of the limb, as in changing the dressings, causes only trifling uneasiness. During the twenty-four hours, about ℥j of pus finds its way from the opening in the thigh. Ordered low diet. ℞.—Quin. sul. gr. v; quart quaque hor. sum. ℞.—Pil. hyd. No. iij; hor. som. ℞.—Tr. rhei ℥ss; mane primo sumat.

10*th.* Only a small escape of thin serous pus from the knee; the splint removed this A. M., and the limb allowed to rest on a pillow.

14*th.* The patient having so far recovered as to allow of operative proceedings on the larynx, with a view to a restoration of the natural air-passage, and the permanent closure of the aperture in the trachea, sulphuric ether was administered to him by saturating a sponge, and placing it over the silver tube in the trachea, through which inhalation went on without embarrassment. After complete anæsthesia had been produced, an incision was made through the integument, along the median line of the neck, from the hyoid bone to the tracheal orifice. The tracheal tube was withdrawn a short distance, and supported by an assistant, to prevent the hemorrhage passing through it into the windpipe. The subjacent tissues on either side of the median line were then dissected up, leaving the free margin of the right thyroid cartilage exposed in its entire length, which was found to be displaced, and widely overlapping its fellow. The anatomical relations of the parts were much obscured from the injury primarily, and from the induration following the inflammatory action excited by it. The edges of the wound were lifted up, and the interval between the cartilages separated as well as possible without opening into the cavity of the larynx. After a pause of about an hour, to allow of the complete arrest of the hemorrhage, which had been very profuse, and principally venous, the final steps of the operation were completed. The crico-thyroid membrane was opened with a sharp-pointed bistoury. Into the wound thus made a strong probe-pointed bistoury was inserted, and an attempt made to separate the thyroid cartilages their entire length. An unexpected difficulty presented itself, for there was found to be an extensive ossific deposit between them which required considerable force to overcome. At this period the condition of the patient became critical. The bleeding had been very free, and from the delay occasioned by the presence of the bony deposit, a large amount of blood had escaped into the air-passage, and the patient began to show alarming symptoms of strangulation. With the handle of the scalpel I succeeded in separating the cartilages wide enough to introduce a piece of sponge, which prevented any further flow of blood. By the application of stimulants, &c., a free expectoration of coagula took place through the tube, and soon the patient began to respire more freely. After a short interval the sponge was removed, and the bleeding found to be perfectly arrested. It had been originally intended to separate the left thyroid cartilage from such adhesions as might be found, turn it back upon itself, elevate it, and unite the two at their free margins. This was found to be impracticable, for the bony deposit had gone on to such an extent that the cartilage was extremely firm and unyielding. It had apparently been fractured and bent upon itself, and occupied the cavity of the larynx. It was still further bound down by the almost cartilaginous hardness of the adjoining textures. All attempts at examination of the larynx with bougies, &c., were attended with violent paroxysmal cough and vomiting, which, in the present weakened condition of the patient, forbade as detailed an examination as could have been desired. The tracheotomy tube was inserted about midway between the division of the cartilages, in order to have its dilating influences on the depressed left thyroid. To accomplish this, it was necessary to drop the hand until the overlapping interval was passed, and then to forcibly carry the tube around the edge of the left thyroid, raising the hand toward the median line of the neck, and pressing the tube downward. The tube was inserted at this position to exercise a lever power on the depressed cartilage. The patient respires with ease through the tube. As every effort at cough provokes hemorrhage, the wound was stuffed with sponge; about the tube cold-water dressings applied; milk-punch *ad libitum*. 10 P. M. Reaction well established; neck much swollen; cheeks flushed; complains of excessive weakness, and pain in deglutition; pulse 120, of good volume. The sponge removed from the wound. Ordered gruel, and pulv. Doveri grs. xv.

15*th*. Strong sympathetic fever; neck much tumefied from violence of inflammatory action about the wound; extreme dysphagia; tongue dry; pulse 96, hard. Apply hirud. vj to neck; an enema of senna. ℞.—Pulv. Doveri grs. xij; hora somni.

17*th*. Patient is very comfortable; active interference with the larynx is attended with severe paroxysms of vomiting and coughing. Tube removed from the larynx, and a wedge-shaped piece of prepared sponge is inserted into the wound to prevent adhesion, and to promote its dilatation. A tube has been worn in the tracheal orifice since the operation to guard against accident. Patient swallows without pain; craves food; pulse 86, full and soft. Porter allowed, with generous diet. The wound of the larynx is kept well dilated by the use of the sponge tent. Bougies are daily passed downwards through the larynx into the trachea, and upwards into the posterior fauces. No. 6 can now be used without much difficulty. These constantly provoke violent retching and vomiting, which severely tax the patient for the time being. A tube is inserted here morning and evening, on a small sized bougie as a guide, between the vocal chords, and retained for an hour. But the patient loses all power of articulation when the tube is in place. Respiration goes on easily through it. A gutta-percha plug of the size and form of the tracheal tube is preserved in the tracheal orifice, while the tube is in its new position.

February 27. Patient is rapidly recovering his health. He can now bear considerable weight on his left limb; knee-joint apparently firm and solid; a few drops of serum only discharged from the fistulous opening. No attempt at union has been made at the fractured jaw. The various textures are, however, firmly consolidated about the fracture, and the patient exhibits no external deformity. Dilating measures still pursued at the larynx. Bougie No. 9 is easily passed in either direction. Respiration goes on as comfortably through laryngeal as through tracheal tube.

March 31. Gutta-percha bougies of large size, and fashioned for the purpose, worn as much as possible during the day. The wound has a strong disposition to contract. The sponge-tent still worn during the night. Notwithstanding the use of astringents and caustics on the mucous surface of the larynx, there is still a troublesome irritability attending every interference with it. The bougies can be worn for about two hours, when the patient suffers from a severe pain in the temples, and at right angle of jaw, which soon becomes insupportable. Cheeks are flushed; conjunctivæ suffused; nausea and vomiting follow, compelling the removal of the bougie.

May 27. Wound of the larynx has now united, except at orifice where the bougies find entrance. Notwithstanding the successful dilatation of the larynx to an extent to allow a sufficient amount of air to pass by the natural passage, and to admit of a free respiration through it, yet every attempt to encourage the air to take this direction has failed. On removal of the tubes, and closure of the orifices, no air can be detected from the mouth. Symptoms of suffocation ensue, requiring the speedy renewal of the tube. In articulation, the diaphragm and thoracic muscles are greatly exerted to insure the production of sound—the patient grunting out his words, as it were, without much distinctness, and in a hoarse whisper. Every expedient having been exhausted in the attempt to restore natural respiration, and as it appeared that nothing further could be accomplished to promote this desirable end, it was determined, after consultation, to close the laryngeal opening, and allow the respiration to continue through the artificial opening in the trachea; firstly, because the tube was worn with less discomfort to the patient in this position than in the larynx; secondly, because the patient could make no articulate sound from the upper opening, probably on account of the interference of the tube with the vocal cords; thirdly, because it was not improbable that there might be troublesome contraction of the trachea during the healing process, especially as the wound has been open for so long a period.

July 1. General health of the patient is now fully restored. Knee-joint is firmly anchylosed, and patient can walk about without other inconvenience than results from a stiff limb. Respiration goes on entirely through the tracheal tube. The opening in the larynx had a tendency to become fistulous, but on the application of caustic it soon closed by granulation. There has been no attempt at union in the fractured jaw. Patient can masticate his food well, and the face is free from all deformity. Medical attendance is now discontinued.

Remarks.—This case affords an example of the wonderful tenacity of the vital principle, sometimes manifested. At the time of the accident, the severity and complication of the patient's injuries forbade any rational idea of his recovery. For the first few days a liberal exhibition of stimulants was required to overcome the severe prostration resulting from the shock to his entire system, occasioned by the fall. There were no evidences of marked inflammatory excitement until the 20th, five days after his fall, and then his symptoms were of an asthenic character, requiring the utmost caution in the use of depletives. On the morning of the 20th, it was seriously contemplated to cut down upon the larynx, but as the patient appeared to respire with sufficient freedom, the idea was dismissed for the time being; and when called upon to operate in the afternoon, the urgency was such as to forbid any elaborate attempt, by a careful dissection, to restore the larynx to its normal condition. The fracture of the tongue bone is a rare accident. I have been unable to find an instance of it, from such sources as I could examine here, unless connected with violent strangulation from a force applied directly to the bone itself. So large a portion of the jaw was lost by fracture, and subsequent exfoliation, that a bony union of the remaining fragments could not be expected. The first apparatus afforded an excellent dressing, and simple fracture of the jaw can be treated by it with advantage. The articulation of the jaw allows such a variety of movement, that it is impossible to apply a bandage to insure perfect immobility. A roller cannot be applied to the healthy jaw, so that the mouth cannot be opened half an inch. Still, sufficient support is given to the fragments to answer in most cases of simple fracture. All that was expected from the jaw-splint afterward contrived was obtained, thereby restoring the contour of the face; quieting the irritation in the surrounding textures from the unrestrained and irregular movements of the bone when acted upon by the muscles attached to them; insuring, as perfectly as possible, their retention in a natural position after nature had completed her reparative efforts by a consolidation of the soft parts about them. I can conceive of no case of fracture of the jaw where there is displacement sufficient to require mechanical support, and especially in compound fractures attended with suppuration, where this splint, or modifications of it to suit special indications, cannot answer all that is required of a splint, at the same time promoting the comfort of the patient; as in this instance the patient, after becoming accustomed to the splint, found it impossible to sleep without it. The silver cap covering the alveolar margin must necessarily be fitted to each particular case; and oftentimes it might be necessary to duplicate the perpendicular plate, for the opposite side, to exercise a retentive force on both fragments.

The fracture of the patella was an interesting feature in this case. It was remarkable that this bone should have been so comminuted without fracture of the long bones entering into the articulation of the knee-joint. The irritation attending the original fracture was so trifling, that there was every indication that the joint would be preserved with a tolerable degree of integrity. About a fortnight after the accident, when the joint had resumed its natural appearance, the separation of a slough, which appeared to be superficial only, opened into the cavity of the joint, and inflammatory symptoms were kindled up, which for weeks threatened the loss of the limb. The exhaustion produced by the constant drain on his system from this source, kept the patient so weakened that nearly six months elapsed before there could be any justifiable attempt to restore the natural air-passage. In operating upon the larynx, it will be observed that sulphuric ether was the agent employed. The inhalation went on without embarrassment to the patient, without exciting cough or sense of strangulation, or stimulating the nervous system, as is not unfrequently the case where anæsthetics are administered under a more favourable combination of circumstances.

Of the anæsthetics, chloroform, chloric ether, and sulphuric ether, the two former—especially chloroform, which is in the most common use—have now a long array of fatal cases attending their exhibition. We believe there is not a single well-attested case on record of fatality from the inhalation of sulphuric ether. This statement is often challenged, but the contradiction really arises from the careless reports of mortality, often in newspapers or otherwise brought before the public, where the general term of ether is used indefinitely for all anæsthetic agents, and the word "etherized" is made synonymous with anæsthesia, or the effects of any of them. This is certainly an important fact for the consideration of medical men, especially since accidents from the inhalation of chloroform have become so accumulated that the propriety of its administration, unless in the most urgent cases, is becoming seriously questioned. Thence, also, the growing substitution of freezing mixtures, as recommended by Arnott, for producing insensibility to pain, in operations involving superficial parts; which, when carried to a sufficient extent to benumb the textures to be incised, from its likelihood to produce sloughs, or suppurating wounds, cannot be esteemed a sound surgical procedure.

There is no doubt that sulphuric ether may produce death, but this is not so likely to happen where an agent is employed which is, as experience demonstrates, more under the control of the surgeon, and less hazardous to the patient. Its perfect safety, with ordinary care, is proved from the circumstance that, although in extensive use in different parts of the country from the date of its application for anæsthetic purposes, yet no mortality has occurred from it. Any one who has been in the habit of seeing both agents administered, chloroform and sulphuric ether—and chloric ether may be regarded as equally dangerous with the former—will be struck with the immediate depression attending the exhibition of chloroform. At the same time, it acts so gently and insidiously that frequently no warning is given of the escape from the waking into the sleeping condition. With sulphuric ether, on the other hand, the various stages of its action on the human body are prolonged, and can be accurately limited by the most inattentive observer; and the period of excitement always discernible, and often violent, immediately preceding the stertor of insensibility, is of great value to the surgeon, as indicative of the actual condition of his patient. Notwithstanding that accidents have so frequently attended the use of chloroform, and very often so in the hands of the most cautious and skilful practitioners, medical men often justify their preference for, and their fancied security in, the administration of it, for the reason that they have never experienced any unfortunate result. But the repeated cases of death from this source in the practice of men as enlightened as themselves in the administration of it, must necessarily awaken doubts in the minds of those who continue to use it, whether they are not constantly exposed to the same mishap. A large number of the fatal instances have occurred in the practice of dentistry. It can be urged that the want of familiarity of dentists with chloroform renders them unsuitable persons to administer it. The objection, however, loses its force when it is considered that the dentist knows as well as the physician the dangerous properties of chloroform; that he applies it sufficiently often to become familiar with the proper mode of administering it—and that he does not require, neither does he seek to produce that state of complete anæsthesia necessary to be secured in order to perform an elaborate dissection, proceeding with his operation when the patient is sensible of what is transpiring.

The common opinion that their employment is made hazardous in every derangement of the thoracic viscera, is certainly a mistaken one. Not only in our own practice, but in the practice of others, a free inhalation of sulphuric ether is often allowed in organic disease of the heart, as an alleviator to pain, and a sedative to produce rest. In inflammatory disorders of the chest, where the powers of life are failing, and stimulants are required, we believe it can be safely made use of, if any necessity arises demanding its quieting effects. Thus, we had a short time since a patient who had a severe attack of pneumonia in both lungs. He was sinking rapidly with symptoms of typhoid; at times he was quite delirious, and his expectoration was decidedly purulent. He finally was seized with an obstinate hiccough, which continued without interruption for two days, and resisted the usual antispasmodics employed to relieve him. Convinced that his case could not be made more desperate, I determined, after consultation, to administer to him sulphuric ether. After a few inhalations, the hiccough was interrupted, and the patient fell into a gentle slumber, which continued for a considerable interval. From this time he began to improve. He had two or three attacks subsequently, which yielded as readily as before on the application of the remedy.

Mr. Syme, of Edinburgh, in the March number of the *Lancet*, makes some very judicious remarks regarding the exhibition of chloroform, in which he points out the necessity of regarding rather the condition of the respiration than of the circulatory system; to learn the actual condition of the patient during the inhalations. Cases are well known where the inhalation has been suspended, the circulation appearing sufficiently vigorous, and the surgeon engaged in his operation, when, to his dismay, he has found his patient in a state of collapse, from which he was with difficulty, or never restored. The fancied superiority of chloroform over sulphuric ether, has come from a belief that it is more prompt in its action, less disagreeable to the patient to inhale, without the unpleasant consequences sometimes attending the inhalation of sulphuric ether; while it is generally believed, also, that the life of the patient is equally hazarded where either agent is used. Sulphuric ether is often intensely disagreeable to the patient, and sometimes—especially if the will is antagonistic—produces a sense of strangulation which arrests or delays temporarily the respiration, and affords alarm to the attendants. There is no real danger in this asphyxia, and, in most instances, the ether can be continued regardless of it without compromising the condition of the patient. The happy effects of sulphuric ether were well illustrated in the operation on the larynx. Just previous to the final step of the dissection, the patient was placed thoroughly under the influence of it. The laryngeal cartilages were then separated, which was attended with considerable hemorrhage, a portion of which found its way into the bronchia. I had some anxiety lest the exclusion of air from the lungs by the hemorrhage would produce a fatal asphyxia, or immediate suspension of respiration in the insensible state in which he was lying—as I firmly believe would have been the case had chloroform been the anæsthetic used.

The excitement of the nervous system attending the inhalation of sulphuric ether, if any exists, can be easily restrained by attendants, and the ether continued without regard to it. In such cases, the insensibility proceeds more rapidly as the physical efforts of the patient, in his struggles, compel a full, deep, and rapid respiration. The after effects, as nausea, headache, &c., are not more common than the like results of chloroform, or chloric ether. A difference of a minute or two in time in producing anæsthesia, is a matter of very little consequence. With a pure article of concentrated sulphuric ether, I have invariably succeeded within two or three minutes from the time the sponge was first applied. The ordinary commercial ether is certain in its results; but a little more delay is required to produce the end desired. It has been proved by experience, that up to this time no agent has been discovered for anæsthetic purposes that can be administered with equal security for the patient. In short, it produces perfect insensibility to pain, and never has destroyed life. The trifling objections that may be urged against it fall in comparison with this important consideration; and we believe the day is not remote when we shall see it exclusively used by surgeons for anæsthetic purposes.

ART. II.—*Practical Remarks on Diseases of the Spleen.* By ALFRED G. TEBAULT, M. D., of London Bridge, Va.

THE advantages I have long had for careful observation of the diseases of the spleen, endemic to the seaboard of Virginia, have led to the opinion that some remarks on the subject may not prove unacceptable to the profession. The want of proper facilities for autopsic investigations, owing, in great part, to the prejudices which here interpose against them, must necessarily render this paper deficient in pathological details; but such anatomical characters as I have been enabled to verify, shall be noticed in general terms, and in order to elucidate the vital changes.

The general name of splenitis, under which all affections of the spleen, of a malarious origin, are often grouped, as it embodies the leading idea of inflammation, is liable to serious objections, and should be restricted accordingly; for it will be found that by far the most frequent lesion of this viscus is congestion, followed sooner or later by hypertrophy and by an anæmial condition of the system.

Enlargement of the spleen being seldom an idiopathic affection, its origin must be sought for in the study of other diseases of which it is symptomatic; and of this class periodical fevers must engross the chief attention. Indeed, from the great frequency of sensations of uneasiness, soreness, and distension, referred to the left hypochondrium, even when no tumour can be diagnosed, and from the peculiar alteration of the blood so apt to ensue, the conclusion may seem legitimate, that an affection of the spleen, for the most part functional, obtains in almost every instance of these fevers.

But, besides this, which, perhaps, may be regarded as a mere passing congestion, rapidly subsiding in the apyrexia, and ending by complete resolution on recovery, no other lesion of the organ is appreciable in the vast majority of the cases of fever which occur in this region; and this subject has received particular attention.

The same examination failed to recognize any greater tendency to infarctions of the spleen, in direct proportion to the intensity or duration of the cold stage of fever, nor did a chronic enlargement invariably increase its dimensions under the severest agues. On the contrary, it has happened that the most enormous growths were preceded by the slightest chills, sometimes by periods of mere vital depression. Thus, for the sake of precision, it may be repeated that the increments of the organ bear no regular proportion to the intensity of the cold stage.

The congestion determined at the earliest stage appeared to be purely passive, but it eventually, when often repeated, changed wholly or in part into the active form, and thus laid the foundation for inflammation or morbid growths. Two conditions are always present in the course of the affections under consideration, namely, derangement and torpor of the hepatic function, and abnormal blood.

It is not usually, however, during the periods of the cold stage, but in the febrile paroxysms that follow, that the greatest increments of the spleen are effected, and sometimes with a rapidity truly surprising. In such cases, the splenic tumour always loses much of its tension at the subsidence of the fever.

Infarctions of the spleen occur more frequently in intermittent than in remittent, in the latter than in typhoid fever; and, whenever it is manifested in the last, there always obtains a marked proclivity to the paroxysmal type. In the earlier periods of congestive fever, a previously enlarged spleen becomes tense and hard during the stage of collapse; but, as the case verges towards a fatal termination, the organ presents the feel of a bag of fluids. Enlargement of the spleen, therefore, is a severe complication in the higher grades of this fever, and its rapid softening a fatal sign.

The organ also enlarges at times on the incubation of exanthematic diseases, as scarlatina or varicella, and, in a few instances, in a slow way, and without the supervention of any notable febrile movement. These latter cases present evidence of zymotic influence, and are tardy of remedial relief.

In a few instances which have passed under treatment, there existed cause for doubt whether the disease of the spleen was productive of, or consequent upon, chlorosis, purpura, or cardiac affections, such as aneurism.

The chronic affection may last for years—even to old age—without any inconvenience to the patient, except such as arises from its bulk; a florid hue of the countenance, and an apparently healthy re-establishment of all the functions may be observed, but usually a slow degeneration results. Purpura, peritonitis, or dropsy may supervene, and the patient is particularly obnoxious to congestive diseases. Here, also, hæmatosis and the hepatic function are always more or less imperfect.

With these introductory remarks, I proceed to describe the forms of splenic affections which have come under my notice.

1. *Passive Hyperæmia.*—During the prevalence of a variable temperature, especially when attended by damp easterly spells, cases are met with, having the following characters: torpor of the cutaneous surface, with increased susceptibility to the impression of cold; some degree of anorexia, gastrodynia, and flatulence; alvine discharges small, dark, and dry; urine pale and copious. These, with some feeling of lassitude, last for a few days, and in the mean time appears a sallowness of the skin, with a dull bluish colour of the conjunctivæ. The patient then begins to complain of an obtuse, though annoying, soreness within the left hypochondrium, which is increased somewhat by pressure and by lying on the affected side; and, when in the sitting posture, his trunk is observed to curve towards the left. On examination, the abdomen is usually found doughy to the feel, but no signs of marked tumefaction of the liver or spleen are discernible, other than a slight shade of dulness over the left hypochondrium, and sometimes, and especially when the frame is attenuated, an elevation or outward projection of the margin of the corresponding false ribs. At this stage, should free bilious evacuations be effected, the patient feels and expresses a great relief from internal oppression, and he amends rapidly. But, when neglected, these cases are apt, on the supervention of fever, to present noticeable tumefaction of the spleen, and to end, by slow degrees, in splenic cachexy.

Thus, also, the next grade of hyperæmia occurs under the action of periodical fever. By palpation and percussion, a moderate increase of volume will be readily recognized, presenting a somewhat globular mass, rather elastic, and sore on pressure, which distends the hypochondrium, and protrudes a little below the false ribs. The sensation of weight and uneasiness referred to this region is partially alleviated by a position that relaxes the abdominal muscles, especially of the left side. Usually, its development is attended with nausea, sinking at the præcordia, flatulence, and torpor of the bowels; micturition frequent; urine sparse and high coloured. These symptoms are manifested under circumstances which would lead the mind to suspect a prior hepatic affection, and both observation and inference tend to confirm it. One case, remarkable as occurring in a negro, may be briefly cited.

Case I.—Aleph, a negress, aged 26. During the first week of a tertian intermittent fever, accompanied with slight chills, she suffered from fulness and pain in the epigastrium and right hypochondrium; pain ranging to the right shoulder; inability to lie on her left side; abdomen large and doughy; considerable dulness over the hepatic region; no appreciable affection of the left side; bowels obstinately costive; urine high coloured; conjunctivæ greenish. In the second week, the pain very suddenly shifted to the left hypochondrium and shoulder, with the simultaneous occurrence of a rapid tumefaction of the spleen, which was sore on pressure. In the mean time the hepatic symptoms subsided. A free action on the biliary organs and bowels relieved the distension, and cinchona completed the cure.

It may be remarked that this sudden subsidence of the hepatic tumour on the as sudden enlargement of the spleen has been observed in other instances.

Free discharge of biliary matter, especially if almost black, with a greenish tinge and a pungent odour, whether the effect of mercurials or merely from an effort of nature, as sometimes happens, has generally a very evident tendency to disgorge the spleen. This discharge appears to be what the ancient physicians called μελαινα χολη, or black bile, and thought the peculiar secretion of the spleen. It may be the pabulum of the portal blood, imperfectly changed by secretion and effused through the pori biliarii. Often this matter has a very acrid quality, causing much pain and burning in its discharge.

2. *Active Hyperæmia.*—If, on the occurrence of the fourth fit of a bilious intermittent fever, the remittent type be assumed, the last described grade of congestion then subsisting is apt, at the height of the exacerbation, to terminate in the present. The splenic tumour enlarges very rapidly, and makes its greatest increments forwards and downwards, so that at times it passes beyond the umbilicus at the ensuing paroxysm. At first, as it advances from the ribs, it presents an acute angle at its extremity, which, passing along the course of the transverse colon, looks towards the epigastrium; but, after a brief period, it descends, as by its own weight, and proceeds towards the opposite ilium, and, in some instances, soon reaches it. At the same time, the inferior margin approximates to, and may descend within, the crest of the left ilium. The development of the tumour is at times so rapid, that it has been known to double its apparent superficies within the space of twenty-four hours—or, rather, during a single paroxysm of fever. The tumour feels most hard and resisting in the vicinity of its descending angle, and these characteristics, like the increments, are most notable at the height of the fever. On the sixth day it usually attains its maximum volume. Its margin is abrupt and well defined, especially about the angle; and, when the patient is caused to lie on his left side, its anterior portion presents a prominent ridge under the abdominal parietes. At the commencement of these cases of sudden

enlargement are commonly noticed tumefaction and dulness in the hepatic region, nausea, pain, or pulsation in epigastrio, and vitiated, but not bilious, alvine secretions.

Case II.—Miss B. S., aged 18, previously in good health, was attacked, on the 15th of August, at noon, with general malaise, chilliness, and a fever, with violent pains in the head and joints, which went off in the night. On the next day the paroxysm recurred at 6 P. M.; on the 17th it was ushered in at noon by a violent ague, and on the evening of the 18th by a mere chilliness; from which time the fever became remittent.

August 19. Visited her in the afternoon. Heat of surface considerable, with a little moisture about the temples; pulse 133, full, quick, and somewhat compressible; headache and pain in the loins, severe at intervals; adnata dull bluish; tongue very much furred. She had had urgent nausea, and some pain in epigastrio, for which she had, not long before, taken an emetic of common salt, the action of which had partially relieved her. Abdomen enlarged and doughy. Some dulness on percussion existed in both hypochondria, with some tension in the left side. Bowels constipated; urine highly coloured. ℞.—Pulv. jalap., bitart. potass., āā ℈ij; prot. chlor. hydr., grs. xij. M. ft. pulv.; div. in ch. 4. Secund. hor. sum. Diluents to be drank freely.

August 20. The fever abated during the night, without going off. She has had four or five alvine discharges, at first fecal and fetid, then watery, but without decided bilious matter. At the morning visit the pulse was 90, quick, and somewhat tense. She had experienced no chilliness. Her abdomen presented a considerable hardness and tumefaction in the left hypochondrium, while inferiorly it had become much softer and relaxed. On examination, the surface of the spleen was found hard, resisting, and sore on pressure; its margin very distinct, and its anterior angle extending from the cartilages of the ribs to a point a little within the mesian line, and about two inches from the scrobiculus cordis. Abdominal pulsations, chiefly in epigastrio, existed to such a degree that the patient had complained of them. ℞.—Prot. chlor. hydr. grs. xij; potass. nitrat. ℈ij. M. ft. pulv.; div. in ch. 6. Sum. 3ia q. q. hora. Towards the afternoon the fever exacerbated, and was attended with excruciating pains in the head and lumbar regions. A light sweat took place towards day.

August 21. At the morning visit the fever still continued. Pulse 110, quick, and small; general heat of surface; forehead hot; irregular perspiration; complains of no pain; tongue coated in the centre, but cleaning at the edges; occasional nausea. The bowels had been moved copiously. The first discharges were almost black, with a greenish tinge, and very offensive. The stools were now more natural in colour. Urine high coloured, and of a peculiarly offensive odour. The abdominal pulsations still continued. In the last exacerbation the spleen had grown to about twice its apparent size of the previous morning, and had reached the umbilicus. Prescribed refrigerants till the fever had further abated, then sulphate of quinia.

August 22. Pulse, at noon, 88, small, and regular; no alvine evacuations; abdominal pulsations still distinct, though weak; spleen had lost much of its hardness and resistance. ℞.—Sulph. quin. grs. ij, every two hours.

August 24. Has had no fever since the last visit; the abdominal pulsations have ceased; spleen considerably reduced in extent and density; skin relaxed, pale, and moist; pulse soft and compressible. Quinia and other tonics soon effected a cure.

Similar hyperæmic increments, though by a slower process, usually take place in fevers purely intermittent, during the height of the febrile paroxysm. A dull bluish adnata, a dingy sallowness of the skin, meteorism of the abdomen, anorexia, stools deficient of bilious matter, and sparse, high-coloured urine, together with a peculiar physiognomy, are more or less present. Sometimes, indeed, this enlargement is effected so gradually and imperceptibly as to escape the attention of the patient or his friends; the chief ailments being malaise, and occasional low febrile conditions of the system.

It may be asserted as a general rule, that the doughiness of the abdomen subsides as the spleen elongates and descends below the ribs, while the blood becomes impoverished of globulin, and so continues for some time on recovery from the original affection. The sensation arising from pressure over the distended spleen is rather of a diffused soreness than of positive pain.

Whenever a resolution of this affection occurs spontaneously, it will be found pretty generally to have been preceded by dark grumous and bilious evacuations, or by enteric or other vicarious hemorrhages conjoined with the restoration of the hepatic function. Thus, a bilious diarrhœa, or cholera morbus, may have a salutary effect in dissipating the infarction in the space of a few days. But ordinarily, its reduction is not effected with the same rapidity which frequently characterizes its growth.

Besides this termination by resolution, others may be noticed. Should the fever persist after the first week, and assume an inflammatory form, splenitis, peritonitis, and tympany may result, and place the patient in imminent peril. Again, the affection may continue for a period unchanged, and under such circumstances as to force the conclusion that hyperæmia may exist in a chronic form, or it may undergo hypertrophy and induration.

The necessary antecedents seem to be a tumid, doughy, and heavy abdomen, evincing in the earlier stages passive congestion of the mesenteric veins, and torpor of the biliary function. The spleen is globular and tense from an accumulation of blood through a *vis a tergo*, while the tonicity of its tissues remain intact. After a limited period, an active congestion preponderates through the splenic arteries, the multilocular tissue and its tunics are forcibly distended, and the organ elongates in the direction where it meets with the least resistance, and to the extent which the peritoneal coat and tunica propria will admit. This stage borders on inflammation; still it cannot practically be classed as such. Some change now takes place in the portal circulation, whence the tumefaction of the mesentery, and sometimes of the liver, subsides. There is now usually manifested a peripheral or reactive tendency. Nevertheless, so soon as the hepatic function is restored the spleen begins to contract, proving that the chief obstruction had been in the hepatic ramifications of the portal system.

Case III.—John G., aged 9, came under regular treatment on the 19th October. About a fortnight since he had been attacked with fever of an intermittent type, which was entirely neglected till the second week, when it became remittent. He had recently taken some aperients, with but little effect. The symptoms were now—skin pale, straw-coloured, warm and dry, but of a peculiarly smooth feel like satin; conjunctivæ bluish; pulse 120, thrilling and compressible; constant headache; tongue coated with buffy matter; aphthæ of cheeks and lips; bowels costive; abdomen sunken inferiorly, but presenting above distinct tumefactions of the liver and spleen, the latter being oblong, and of considerable extent; soreness and dulness over both hypochondria; some epigastric tenderness; had ejected a couple of worms upwards; fever constant; exacerbation in the afternoon and night. Fearing cancrum oris, a single dose of calomel was ordered, to be followed by laxatives of rhubarb and bitartrate of potassa, *pro re nata.* By their means, some dark watery discharges were obtained, and the headache was considerably alleviated. After this the treatment consisted of sulph. quinia during the remission, and of the neutral mixture in the exacerbations, with occasional laxatives, but no marked amendment followed.

Oct. 21. Spleen somewhat smaller and less dense. A foul ulcer appeared on the inner portion of the lower lip, which was touched with caustic. Cinchona was substituted in lieu of the quinia. Enemata.

23*d.* In consequence, perhaps, of the failure to bring down feculent discharges, his father had resorted to some patent prescriptions, and he was found suffering from excessive nausea, vomiting, and epigastric soreness; great prostration; the bowels were not moved; ulcer improved. ℞.—Acet. morphiæ gr. j; acid. sulph. gtt. xxx; aquæ ℥vj; ft. mist. cujas sumat ℥ss; 6ta q. q. hora. Impon. emp. lyttæ epigastrio.

This treatment very promptly relieved the gastric symptoms; pulse 110, thrilling; respiration accelerated; tongue furred; drowsiness at times; complains of a sensation of choking and of froth in the mouth; ulcer healing; no stools. Enema ʒiv spts. terebinth. in mucilag. et rep. si opus sit. These procured fecal and dark bilious discharges, together with a number of worms, to the great relief of the fever and the more urgent symptoms. Contin. med. anodyn. longo intervalo. ℞.—Infus. amarus.

29*th.* No fever; complexion still sallow; skin soft, moist, and pleasant; no tumefaction of the liver perceptible; bowels regular, discharges natural; spleen greatly reduced. ℞.—S. quin. gr. j; sesqui carb. ferri gr. v; 3ia hora q. q. sum. Under his treatment he entirely recovered his health and complexion, the spleen having returned to its normal condition.

3. *Hyperæmia, with partial Organic Change.*—After the cessation of the febrile paroxysms in which originated hyperæmia of the spleen, the organ may, on the whole, continue for a long time slowly to increase. On inquiry it will be found, that the case had been left to nature, or been imperfectly treated, and that both the hepatic function and hæmatosis remained imperfect. The patient shows a disinclination to exertion, either bodily or mental. The spleen may attain a great bulk, but is even then subject to considerable and sudden fluctuations as to size. Its consistency is not uniform, there being often two or more points of greater density and prominence; or, in other words, of fleshy hardness, while the margins are usually notched. Exposure to a cold temperature, and the accession of fever, are attended with a greater induration of the entire mass, but this is seldom accompanied with pain, nausea, or precordial distress. Under proper treatment a great reduc-

tion, sometimes a complete cure, can be effected within a month or two. The anatomical characters are in accordance with the description here given.

4. *Hypertrophy.*—Hypertrophy, or the excessive growth of the proper structure of the spleen, like the same lesion of the heart, depends upon a continued impediment to the free flow of the blood, and hence is a chronic affection. The tumour thus formed is generally of an oblong form, firm to the touch, of fleshy hardness throughout, and of little elasticity. It is subject to a slow and gradual increase whilst undergoing this, and is liable to comparatively limited variations of size under the occasional action of cold, stimulation, or fever. Its surface is sometimes slightly uneven; the margins are usually well defined and rather prominent; sometimes fissured so as to present two or more masses. The sensations referred to it are of oppression and weight; seldom of soreness and pain. Hypertrophy may progress to an enormous degree, so that the tumour, with its inferior angle within the crest of the right ilium, may distend two-thirds of the anterior parietes of the abdomen, and weigh from ten to twelve pounds.

Often, as has been said, the bulk or weight of the spleen constitutes, for a long time, the only inconvenience complained of, and the patient who, to a casual observer, may seem to be in good health, may attain to old age. Indeed, in some cases of hypertrophied spleen, all the functions are, to all appearances, perfectly sound. But, on closer scrutiny, it will be found as a general rule, that though the system may tolerate, and be accommodated to, this abnormal state of things, a train of slow and insidious changes are taking place. The conjunctivæ will always be found of a dull, bluish or greenish hue, and the blood and cutaneous surface more or less abnormal; so that even when the complexion is florid, a dusky hue—especially of the cheeks—will be observed.

The hard, resisting, fleshy mass is always rendered more turgid by high stimulation, fever, gastric distress, torpor of the bowels, and vicissitudes of temperature, especially changes from hot to cold. This turgidity is accompanied with *frottement* when the parietes of the abdomen are slightly pinched, and rubbed, as it were, against the spleen; but no pain results. Hypertrophy is benefited by settled warm weather, well ventilated localities, temperance in food and drink, and the free action of the liver and bowels.

In a great majority of instances the skin will be found of a peculiar, pale, sallow, or dusky hue; not like that of ordinary jaundice, but as if resulting from a dissolved condition of the blood, and sometimes approaching the colour of new mahogany. An inspection of the blood shows it deficient in fibrin and red globules. The crassamentum is dark and grumous; pulse soft, small, and thrilling; the eyeballs are sunken, and lie loose within their sockets from the general deficiency of fat in the system; while the frame attenuates, the abdomen protrudes; tongue pale, papillæ small and white; gums thin, shrunk, and yellowish; lips thin and pale; the appetite is usually good, sometimes voracious, but the process of assimilation is evidently imperfect;

alvine discharges, for the most part, sufficiently regular, but darker or paler than natural; the urine varies in quality, is usually copious and pale, except under febrile states, when it becomes high coloured and sedimentitious, and, in a few instances, melænic. Albuminuria is a frequent complication when a dropsical tendency is manifested.

The patient is liable, from trivial causes, to slow fevers, which may not prove sufficient to confine him within doors, and thus he drags lazily through his vocations. The general tone of his mind lowers; he loses all energy; his speech becomes drawling; respiration easily oppressed, and his extremities are often cold. Finally, the skin assumes a soft, satin feel, or resembles a dry serous membrane; the veins are shrunk and flaccid; few are to be seen about the extremities, but over the abdomen they present a reticulated appearance, and about the temples are imperfectly occupied with black blood, which, when pressed out, flows back with an interrupted current. Abdominal pulsations, and the bellows sound of the heart, are not uncommon. After an exposure to cold calculated to repress the little cutaneous action yet remaining, or a severe ague, anasarca may supervene, leading eventually to general dropsy. On the other hand, ascites begins after over-exertion, stimulation, fever, or injuries to the abdomen, and slowly progresses too often to a fatal termination. The fluid is interposed between the spleen and the abdominal parietes, so that the enlargement of the former will not be very evident in the ordinary mode of examination, yet even then a nice touch will give, on percussion, the sensation of a solid mass interfering with and breaking the free fluctuation; but, by changing the position of the patient to cause the spleen to become dependent, it may generally be traced. I once saw a case where, after a strong ague, death resulted, as I thought, from extravasation of blood from a hypertrophied spleen into the cavity of the peritoneum. The grounds for this opinion were such as satisfied my mind at the time, but as I have preserved no notes of the case, and did not verify the opinion on the body, I shall not notice this further.

On dissection, the spleen is found to resemble a dark muscular substance in firmness and colour, and exhibits its cellular tissue much thickened. In one instance, the liver was atrophied, and reduced to less than one-third of its natural size.

Hypertrophy of the spleen often admits of a considerable reduction through a treatment calculated to relieve the liver and improve the blood; but this must be persevered with for a long period. The reduction has been effected to that degree that no tumour could be felt within the hypochondrium, while the functions of health were fully restored. It is in persons not past thirty-five years of age, who present no signs of plastic adhesions of the organ or anasarcous swellings that success may be hoped for. Still, in older cases deemed irremediable, sometimes well directed efforts may be rewarded with success, if not to the full restoration of health, yet by the removal of dangerous complications to the prolongation of life.

Case IV.—Miss ——, aged 16. She had been affected from her infancy with an enlargement of the spleen of considerable extent. Called to see her on 16th Oct. '36, on account of a quartan ague which had persisted for more than a year. Chill usually slight; fever high, and accompanied with intense headache; pulse 100, small and compressible; complexion dingy and sallow; skin seldom moist; bluish conjunctivæ; tongue furred and pointed; costiveness; urine orange; abdomen tumid; spleen triangular, of fleshy hardness, and distending two-thirds of the anterior parietes of the abdomen, the margins being easily traceable. She says, "it has never been painful, it only feels heavy." Gave her a laxative of rhubarb and calomel, to be followed with a saline aperient. These operated well, producing dark and offensive stools.

Oct. 17. Pulse 80; some perspiration; spleen evidently less turgid. ℞.—Sulph. quin. gr. ij., secund. hor. sumend.

From this time to the 23d, the date of the last visit, there was no return of fever; the treatment consisted of the quinine during the day, and a blue mass pill at night; the alvine discharges became natural; adnata clear; skin fairer and much improved; tongue clean; abdomen greatly reduced, and the spleen diminished to about one-third of its former size. At this point, so far as I was concerned, the treatment ceased, the patient thinking she had sufficiently recovered, and indeed her general health and personal appearance were astonishingly improved.

In a year or two after this, she married. While in the parturient state, and under the accession of autumnal fever, she experienced much distress in the splenic region. A medical friend, under whose treatment she had passed, used the muriate of ammonia freely, but, as he informed me, with no benefit. On consultation I advised quinine and the preparations of iron, which, although used with great irregularity, proved of service. She has borne three children, and is still living. Her health is for the most part sufficiently satisfactory, although the spleen, now much reduced, can still be readily felt, and a tendency to splenic cachexy is quite evident.

Case V.—Henry W., aged 25. Had also been affected with hypertrophy of the spleen from infancy. The tumour now extended to some distance below the umbilicus, and to the right of the mesian line. He had been much annoyed by it under the occasional febrile attacks to which he was subject. This annoyance had increased of late; he lost all energy; his complexion and general symptoms were as heretofore described.

In 1845 he suffered in addition from phagedenic ulcers of the legs, which were cured with difficulty. He came under regular treatment Sept. 24th, 1846. Cathartics of calomel and rhubarb were at first administered, but with precaution, till proper alvine evacuations were obtained. Then he was ordered daily either the tinctura ferri chloridi or the carb. ferri, till the December following. No quinine was given. He then, for the first time for many years, became quite fleshy and florid, while the spleen, which had slowly and gradually diminished, had shrunk beyond reach, so as not to be perceptible either by palpation or percussion.

Aug. 10, 1847. An attack of intermittent fever came on, for which I was called in. A slight enlargement of the spleen had taken place below the ribs. After a purge, large doses of sulph. quinine were given, and the latter were followed by citras ferri for several days. Once more the splenic affection disappeared, and his health continued good to the 23d Oct., when a pleurisy supervened, for which he was bled to some extent.

Sept. 15, 1849. He had been in good health to this time, and without any enlargement of the spleen. I was this day called to see him with an attack of bilious intermittent fever. After the ordinary treatment, including quinine, as there was a tendency to anæmia more than ordinary, the tinctura ferri chloridi was prescribed for some time. During more than five years he has since continued in excellent health.

Case VI.—Wm. Smith, aged 26, was admitted to the poor-house of Princess Anne County, under my charge as the physician. He had been in a cachectic condition for years. He was subject to occasional and irregular paroxysms of fever; complexion anæmic and bombycinous; conjunctivæ greenish; abdomen greatly enlarged; on examination the liver was found decidedly engorged, and extending from the right hypochondrium to the epigastrium; spleen enormously hypertrophied, hard, inelastic, and descending diagonally to the right iliac region; bowels torpid; stools pale and deficient of bile; digestion imperfect; listless apathy; respiration easily hurried; pulse thrilling and small; face often bloated; inferior extremities, at times anasarcous, and now the seat of atonic and phagedenic ulcers. He complains of no pain, but of an internal oppressive weight attended with some soreness. No serous effusion into the cavities could be diagnosed.

After a moderate and careful use of mercurials, followed by nitric acid till the condition of the liver and bowels was improved, the most decided benefit was derived from a free use of decoct. cinchon. flav., together with ferri subcarbonas employed for a long time with occasional resinous purges *pro re nata.* In the meantime, the ulcers were treated mainly with charcoal poultices and pyroligneous acid lotions. He recovered his health in every respect, became florid and fleshy, and was discharged cured in about a year.

Case VII.—David Jacobs, aged 27, admitted to the same institution. This also was a case of long standing. Febrile action seldom well pronounced; on the contrary, the surface was generally cool; pulse exceedingly small; face bloated; cutaneous surface, even the lips of a light clay colour, and exsanguineous; adnata pale yellow; tongue furred, white; appetite voracious; abdomen protuberant; bowels generally torpid, but affected at times with serous diarrhœa or dysenteric bloody discharges; urine orange; spleen enormous, hard and somewhat sore; signs of liver disease not so distinct as in the former case; anasarca of legs, and an atonic chronic ulcer on the ankle. A very few doses of calomel soon resulted in a slight ptyalism, though their general effect and that on the chylopoietic organs were very beneficial. Under quinine, precipitated carbonate of iron, and when necessary mild laxatives, the skin became more natural, the œdema disappeared, the abdomen reduced, and the spleen to that degree that it could be felt with difficulty. This treatment lasted for a year and a half, when he left the poor-house in apparently a good condition. The ulcer had been treated as in the former case.

5. *Inflammation.*—The existence of inflammation of the spleen cannot be correctly ascertained without a minute attention to all the circumstances attending it, and this remark is peculiarly applicable to the early stage. Thus, considerable heat, pain, and tumefaction, within the left hypochondrium may within a few hours be found not to be constant symptoms, but those which are dependent upon causes more transitory than inflammation. A lancinating pain periodically recurring may be traced to neuralgia, a complication not unfrequent of hypertrophy of the spleen. The patient may flinch from pressure, owing to the condition of some neighbouring viscera, and sometimes merely during the periods of febrile excitement.

Though splenitis may not be of such frequent occurrence as some would lead us to imagine, it is seen sufficiently often to enable us to approximate to a correct diagnosis. This diagnosis must be based generally upon the *constancy* of heat, pain, and tumefaction, referred and distinctly traced to the spleen, together with the persistence of a fever which loses much of its tendency to remit. Splenitis may be subdivided into acute and chronic.

Acute splenitis is chiefly seen under such circumstances as would lead us to presuppose mechanical violence, as friction, great pressure or blows inflicted on the spleen when enlarged. The fever is pretty constant and acute, with little or no remissions; pulse somewhat hard and frequent; emesis at times; pain of the spleen persistent, sharp, and increased on the least pressure; pain extending often to the left shoulder and ilium; disagreeable sensation of heat within the abdomen. The margin of the spleen dips inwards, as it were, and becomes more indistinct than in hypertrophy of the organ, while the central portion presents a rounded, tense, and elevated mass, which cannot be separated ever so little from the margin of the ribs against which it presses, and is often discernible to the right above the general level of the abdominal surface. The lower intercostal spaces are usually depressed; the trunk curves towards the left, though the patient cannot lie on that side, and the thigh is habitually semiflexed. The temper is irritable. The inflammation readily spreads over the peritoneum, and tympany, delirium and death may close the scene. Should recovery, however, take place, plastic adhesions are contracted with the serous lining of the abdomen and viscera. In their formation, a sort of *frottement* is very evident for a few days, when the hand is placed lightly over the splenic region. Sometimes the patient may pass over the acute attack to fall a victim to the serous effusions consequent thereto. The inflammation is seated primarily in the peritoneal and proper coats, but may involve the parenchyma.

CASE VIII.—Mrs. ——, aged 28, affected for some years with splenic cachexia, gave on the 29th Nov. premature birth to a fœtus of the seventh month. The placenta being retained over six hours, medical aid was resorted to. On examination it was found, with the exception of a small portion still within the womb, and adherent thereto, some coagula had passed, and the pains had not occurred for some time; but by gentle manipulations and the introduction of the fingers within the cervix, the placenta was soon delivered; the womb contracted well, and no hemorrhage ensued. Her spleen was so enlarged and tense as to interfere with and prevent the proper pressure over the hypogastrium. A dose of laudanum was given, and quietude enjoined. She passed the next twenty hours quite comfortably, at the end of which she was attacked with a violent ague, to which succeeded fever, great prostration of strength, and sharp pains in the splenic tumour, increased on the lightest touch. A remarkable contraction of the spleen had taken place, together with a rounding of its mass and the dipping of its margins. There was no pain in hypogastrio even on pressure, and no after-pains had been experienced. Prescribed anodyne mercurial pills, emplast. lyttæ to the hypochondrium, and occasional doses of castor oil, under which treatment the inflammation so rapidly subsided as to admit the use of s. quinine on the

6th December. Her general health amended slowly, but being in indigent circumstances she could not be deterred from the drudgery of domestic duties, part of which were outdoor, so soon as she was able to leave her bed. In consequence of this exposure she was attacked by pneumonia on the 25th, which soon proved fatal. I regret that the record of this case was not less meagre. The prostration was such that venesection or any direct depleting means was deemed unadvisable.

Case IX.—Pending the course of an intermittent fever, a boy, aged 8 years, was injured by a fall from a height on his left side, but under what precise circumstances could not be ascertained. He had been labouring under a considerable enlargement of the spleen. He soon complained of violent pains in the splenic region, could not endure the least pressure, even of the bedclothes; fever constant; occasional delirium. On the next day the abdomen became swollen and painful all over, but chiefly so in the left hypochondrium; bowels costive. At this stage I was sent for, and on arrival found the patient moribund, and affected with low muttering delirium, picking of the bedclothes, &c.

6. *Chronic Splenitis* is rather more obscure than the acute form. It is marked by fever of a lower grade, and which is never entirely absent; depression of spirits, anxiety of countenance, nausea, a constant feeling of internal oppression and heat, and of pain, dull, deep seated, and persistent, in the splenic region, which is increased by pressure to some extent; spleen in a state of tension; alvine discharges, when obtained, exceedingly dark. The position of the patient, and the range of soreness, are pretty much as last described. Chronic splenitis may end in resolution, suppuration, or degeneration, and may be complicated with ascites or hemorrhages. The inflammation is essentially parenchymatous, and appears to involve the nutrient vessels and the tunica propria, from which it may extend to the peritoneum.

In both forms of splenitis, the organ presents, after death, some degree of turgescence, and appears variegated externally with shades of blue and red.

Case X.—Mrs. G., aged 34, in bad health for years; complexion dingy yellow; spleen enlarged; had suffered much from fever for some months past. No other particulars of the previous history could be ascertained, except that she had latterly complained of a constant, deep-seated pain of the spleen, which had caused her to keep her bed. No treatment had been resorted to.

Nov. 16. Summoned in haste to see her. Skin bombycinous, soft, and dry; pulse 100, shattered, and small; tongue furred, but red in its median line; some nausea, and epigastric distress; bowels moved once in twenty-four hours; stools dark and fetid; urine orange. Position in bed such as to relax the muscles of the abdomen, which region was large, and sore to the touch. She complains of pain and heat in the splenic tumour, over which she had applied a blister plaster. On examination the spleen was found turgid, and very sensitive to pressure. ℞.—Prot. chlorid. hydr. gr. xij; pulv. antim. ℈j. M. in sex. pulv. div. secund. q. q. hora sumend. Free diluent demulcents.

17*th.* Pulse somewhat firmer; tongue cleaning; some nausea continues; bowels freely moved; discharges "like pitch;" she is exceedingly restless, although her movements are but limited. She only complains of pain confined to the left hypochondrium and shoulder. The former plaster having acted only slightly, a larger one was applied. Mild anodyne, diaphoretic, and diluent drinks.

18*th*. Has slept well through the night; has but little nausea; the bowels are checked; countenance somewhat flushed; extremities cold; pulse 110, small and feeble; tendency to delirium and colliquative sweats. The emp. lyttæ failed to act well. Ordered an emollient poultice over the blistered surface, and small doses of the prot. chlorid. hydr.

19*th*. In the night excessive pain in the abdomen came on, together with vomitings of a greenish liquid; pulse 110, and extremely feeble; extremities cold; colliquative sweats; tympany. She answers rationally to questions, but soon relapses into stupor. Says she has no pain to-day. Died in the afternoon.

7. *Suppuration.*—When an enlarged, tense, and painful spleen becomes irregularly soft and yielding, while rigors not periodic supervene, we may suspect suppuration, and our diagnosis proves the more certain if, in addition, a hectic fever is established, and the cuticle, especially that over the tumour, appears shrivelled, shining, and furfuraceous. A little later, fluctuations more or less obscure may be felt within the tumour in the emaciated subjects. The organ may contract adhesions to the hollow viscera, and thus the pus, often intermingled with blood of a dark grumous character, may be coughed up, vomited, or passed downwards. Under these circumstances, recovery is possible. In one or two instances, from the symptoms preceding death, I suspected an effusion of the pus within the peritoneal cavity, but of the fact I have had no ocular demonstration.

In my opinion, the matter was discharged through the left lung in the following instance:—

Case XI.—John Absalom, aged 35, subject to a notable hypertrophy of the spleen for a long period, was attacked, on the 4th of May, with symptoms of cholera morbus.

May 6. Visited him. His evacuations were frequent and large, and attended with much pain and griping; nausea, but not vomiting, continued; perspiration profuse; pulse small, weak, and sinking. These symptoms were readily relieved by appropriate means.

After a few days, however, it was found that a constant pain, increased on pressure, persisted in the region of the tumefied spleen, the surface of which organ was hard, smooth, and bulging. A soreness, extending to the epigastrium, and up and down the left side of the body, was also complained of; and he was unable to lie on that side. Pulse small and frequent; fever pretty constant, but never high; skin often moist; colour pale, dingy yellow; peeling of the cuticle of the palms and soles; adnata bluish; no affection of the lungs was detected; the liver was not perceptibly enlarged; considerable emaciation.

Subsequently (the date was not preserved) a severe rigor took place, and the fever became decidedly hectic. Meanwhile the surface of the spleen (the parietes of the abdomen being thin) became nodulated and soft in spots, where some degree of fluctuation could be recognized. The intercostal spaces of the false ribs were depressed, especially over the spot where a portion of the spleen was embraced; his breathing might have been a little hurried, but percussion over the lungs yielded a clear sound. There was, indeed, some pain on inspiration at the base of the left lung, and the abdomen was generally slightly tender on pressure; but the chief ailment was referred to the left hypochondrium. A hacking, dry cough then ensued, but after having lasted for a few days, on a sudden a profuse discharge of a purulent and very fetid matter was brought up. When lying on the back the cough was little troublesome; but whenever he attempted to rise, or assumed any position to call into action the abdominal muscles, the expectoration became urgent and profuse, but always more or less purulent. The pain was now entirely confined to the left side, and was chiefly centred at a point a little below the false ribs, where also existed a gurgling which was evident even to himself. The spleen was greatly reduced in size—perhaps to one-fourth of its original proportions; it was still painful on pressure, more uniformly soft, and little fluctuation could be detected; pulse weak and shattered; desquamation of the cuticle.

At this point the patient passed for a time from under my charge, having, without my permission, been removed by his friends to a distance.

About the beginning of July he again sought my assistance, being then still further emaciated and prostrated by a colliquative diarrhœa and sweat. These discharges were very unexpectedly benefited by treatment. On the 22d July the expectorations had nearly ceased, but the spleen had again become hard and prominent, while the abdominal muscles were generally drawn in. He soon after died.

Case XII.—Mrs. ——, aged 38, had been subject to hypertrophy of the spleen for many years. She stated that at first the situation of the spleen was in superior portion of the abdomen, and above the umbilicus, where it remained till a severe attack of fever, when she "felt it give way suddenly, and, on examination, it was nowhere to be found." On recovery, however, she perceived a hard tumour occupying the hypogastrium and the left iliac region. This tumour was subject to the same variations, under febrile and other conditions, as the spleen. Since then she has given birth to several viable children. Pregnancy always carried the mass higher up. She has never suffered from any affection of the uterus or bladder. Complexion dingy; conjunctivæ bluish; appetite voracious.

Jan. 3. I was called on to attend her in an abortion of the fourth month, preceded by a considerable hemorrhage. In a short time, under appropriate treatment, she got about, but perhaps returned too soon to her domestic duties, as she then complained of a soreness in the left iliac region, extending to the hypogastrium, corresponding to the mass of the splenic enlargement. She was also debilitated and pale, but would resort to no further treatment.

A few days afterwards the tumour became hard, tense, and painful. It also increased its dimensions, though it did not rise above the umbilicus, or to be distinctly traced into the hypochondriac region. The fever was constant and distressing. I was recalled on the 23d January. The fever soon assumed a decided hectic type, with accompanying rigors, and simultaneously the portion of the tumour in the hypogastrium showed marked softening in spots, and the case became critical. In all this affection the superior portion of the abdomen was not protuberant, or noticeably sore from pressure. Suddenly some matter and blood were evacuated per rectum, and soon after large quantities of pus were passed, with a great subsidence of the tumours and soreness. The fever abated, and a notable amendment succeeded. At intervals, for a few days, matter was so discharged, and the patient gradually recovered. The tumour, though greatly reduced in size, still occupies the hypogastrium, and appears less movable than formerly. She has since become pregnant, and borne a child without any untoward circumstances. Her abdomen, at present, is excessively large, although her general appearance has improved. The treatment during the suppuration consisted chiefly in supporting the general system; afterwards, chalybeate preparations were given.

8. *Softening.*—When a hypertrophied, or otherwise enlarged spleen, undergoes the softening degeneration, the process does not clearly indicate an inflammatory action, although a low febrile condition may coexist with the derangement of the chylopoietic viscera; but that which attracts our attention from an early period of these cases, is the morbid or dissolved constitution of the sanguineous mass.

Petechiæ, occasionally interspersed with vibices and ecchymoses, appear first on the inferior extremities, then on the trunk and arms. The face becomes somewhat bloated, and marked with dusky or livid blotches. Nor are those spots confined to the outer integuments; they invade the mucous membrane of the mouth, tongue, fauces, and, in all probability, of the nasal fossæ and the hollow viscera. The gums part from the teeth, become spongy, sore, dark red, or purple, and present here and there small bloody blisters. The breath is offensive; respiration hurried; pulse usually small, and easily compressible; emaciation progresses, and the extremities feel cold.

In the mean time the spleen acquires a degree of sponginess, whilst, instead of an abrupt margin, or one which dips inwards, we find the edges, when traced, terminating almost insensibly among the viscera. As the softening progresses, often without any pain, the mass may even present the feel of a bag of fluids.

Along with these changes, hemorrhages occur from the gums on the slightest touch, and are also apt to proceed from the other internal cavities, whence epistaxis, hæmatemesis, and hæmaturia, sometimes trivial, but at others incessant, and rapidly exhausting the patient. In all cases, the coagula forms very slowly, and the blood is thin and darker than usual. No instance has appeared where purpura hemorrhagica did not accompany ramollissement of the spleen; the converse of which one may not be equally prepared to maintain.

Softening of the spleen seldom ends in general dropsy, though a slight œdema of the face and ankles is not uncommon. The exceptions to this rule constitute cases which threaten speedy dissolution, and are beyond all hope of remedial amelioration. Indeed, the prognosis in softening of the spleen is, on the whole, unfavourable, except in the earlier stages, when it is partial, and in the young; still, much may often be done in the advanced stages and in elderly persons to prolong life.

Of all the forms of splenic affections, in this mercurials must be used with the utmost caution, and oftentimes they should be proscribed entirely, on account of the imminent risk of stomacace, which sometimes proves a natural result when no such remedies had been employed. Thus, in two or three instances of ramollissement, cancrum oris of great severity came under my notice, in which, I am certain, no remedial means whatever had been used for months previously. It is not uncommon to meet with phagedenic ulcerations of the inferior extremities, which heal badly.

The spleen, on examination after death, resembles a sac containing grumous, or semifluid blood; its cellular tissue being easily torn, and more or less destroyed. There are some reasons to suspect that the softening noticed after congestive and pernicious fevers is, in some instances, the result of cadaveric changes.

Case XIII.—Mr. J. W., aged 54, residing on the sea-shore, had been affected with an enlargement of the spleen from early life, and with slight ulceration of the gums for some years. He states that he had been free from any severe attack of fever for the last twenty years. Within a few days, his mouth had become insupportably painful, so much so as to deprive him of sleep, and he had also been troubled with epistaxis.

May 28. This morning he bled from his mouth to the extent of a gill, and I was in consequence sent for. Says he has had little fever; feels weak; is not costive, and can trace no error in his diet or mode of life; general appearance expressive of anxiety and suffering; complexion dingy, but his face is at times irregularly blotched with dusky red spots; conjunctivæ greenish; mouth, tongue, and fauces exhibit petechiæ, a few bloody blisters, and patches of partially separated epithelium, and effused shining lymph; gums spongy, ulcerated in places, parted from the teeth, and very painful; saliva tinged with blood; pulse 90, small, and easily compressible; stools dark and offensive; urine high coloured; inferior extremities closely dotted with a multiplicity of minute petechiæ, among which are vibices; abdomen large, and covered with a network of dark, turgid veins, more numerous and prominent on the left side. On minute examination, no increased bulk of the liver can be detected. The spleen occupies the larger portion of the umbilical and left lumbar regions, and extends downwards almost to the crest of the ilium of the same side. Its central portions appear thick and bulging, and communicate a feel somewhat similar to that of an œdematous swelling; while the margins, less abrupt than in hypertrophy (the angle, especially, being more blunt), are thinned off, as it were. The spleen has never been painful. Dulness on percussion in the left hypochondrium. He had very recently taken a saline cathartic, which had acted well. ℞.—Sulph. quin. grs. ij; subcarb. ferri grs. x; every two hours. ℞.—Anodyne and astringent lotion for the mouth. Ordered, also, an anodyne each night, and acidulous drinks during the day.

June 1. Complexion somewhat improved, and without any dusky hue of the cheeks; surface moist; pulse 100, more developed; tongue pale, more of its epithelium peeled off; blood still oozes at times from the denuded surfaces of the tongue and mouth; ulcers of the gums less angry; abdomen much reduced; veins less turgid; spleen considerably diminished in thickness and width—the latter measures about four fingers, whilst it has elongated below the umbilicus, and in the direction of the right ilium, its edges being more distinct, and its substance firmer; no soreness manifested on palpation; bowels costive; urine natural in appearance; sleeps badly. Continue quin. sulph. et subcarb. ferri p. Lotio sacch. saturni cum tinct. opii. Cap. pulv. jalap. grs. xv, cum bitart. potass. ℈ij, nocte maneque.

June 3. The powders acted well; discharges represented as grumous and exceedingly offensive. Hemorrhage and pain of the mouth entirely relieved since using the last lotion; new epithelium formed; abdominal parietes flaccid; veins disappeared in great part. The spleen has apparently shortened one-half, but continues of the same breadth, is firmer, and with distinct margins. Continue quin. et ferri carb.

June 6. Pulse 80, regular; mouth, except gums, nearly well; general appearance improved; conjunctivæ still greenish; bowels regular; discharges natural, but dark from the effects of the iron; minute petechiæ of inferior extremities. Has had an attack of epistaxis. Continue med. et lotio.

June 9. Pulse 88, compressible, but full; has had some fever since I last saw him, owing to labour at the plough, which he unadvisedly attempted; petechiæ and vibices nearly vanished; bowels regular; the spleen hangs only two inches below the ribs, is neither sore nor tense; complexion, though still dingy, greatly improved; adnata pale green. Ordered chalybeates daily, and mild laxatives *pro re nata*, to be persevered with for a considerable period; but I fear, I may add, he will abandon all treatment whilst the symptoms are not urgent.

Case XIV.—James Waterman, aged 19, was admitted to the poor-house for phagedenic ulcers of both legs. He had been in bad health from infancy, and has never known the time that his spleen was not enlarged. Mental depression; skin relaxed, soft, sallow, and presenting dusky-red blotches; adnata pearly; tongue smooth and red; gums tumid, and parted from the teeth; pulse small, feeble, and compressible; low, irregular fevers, with slight chills; lower extremities cool, and having a tendency to œdema; abdomen protuberant; bowels occasionally loose; stools dark, small, and at times bloody; spleen enormous—feels like a spongy and rather yielding mass, with the margins almost undefined, yet, when he lies on his left side, the parietes of the abdomen are pressed out in a ridge corresponding to the anterior edge of the organ; petechiæ on the inferior extremities; the ulcers are ragged, foul, and sloughing. ℞.—Quin. sulph. grs. xv; aquæ ℥viij; acid. sulph. gtt. xxx; tinct. opii gtt. lx. M: ft. haust f℥ss secund. hora. Lotio acid. pyrolign. et cataplas. carbo-ligni applic. ad ulcer. Generous and nourishing diet.

The effect of this treatment, in a short time, was the restoration of the bowels and secretions to their normal condition, and the improvement of the general health and digestion; the gums healed, and grew firmly attached to the teeth; the skin became moist, clear, and of a tint somewhat florid, although some yellowish spots remained on the face; all purpuric spots, as also œdema, had disappeared from the extremities; the granulation and cicatrization of the ulcers were going on well; pulse full and regular; his strength was greatly restored; mind cheerful and hopeful; abdomen natural in size; and the spleen was contracted and reduced to a degree that it required some tact to trace it out. There was no soreness in the splenic region, except at a point outwardly and at the edge of the false ribs, and only on pressure. The patient could now lie easily on either side. Ordered preparations of iron, and, to the ulcers, liquor calcis and simple cerate.

After the latter treatment had been persevered in for little less than a year, he was discharged, completely cured, and advised a change of climate to avoid a re-excitation of the affection from a future attack of autumnal fever.

Case XV.—Only some of the leading features of this case have been preserved, but it presents some interesting points. Mr. ——, aged about 50, a highly respectable gentleman, had laboured under splenic cachexy for a great number of years, during the most of which time his condition was as follows: Countenance somewhat bloated, sallow, and interspersed with dusky coloured blotches; gums spongy and ulcerated; breath fetid; respiration easily hurried; abdomen prominent and doughy; spleen much enlarged, and rather soft and yielding; its margins depressed, but less so when he lay on the left side; habitual costiveness; urine usually sparse and orange coloured; limbs attenuated; phagedenic ulcers of legs. Pending this time, having himself extracted a loosened tooth, the hemorrhage consequent thereto was such as to defy every means employed to arrest it, till, as a last resort, it yielded to graduated compresses applied to the socket, and closely bandaging the jaws. I think he had also had an attack of intestinal hemorrhage. Such is briefly, the previous history.

In the month of October, 1843, he came under my treatment for an attack of bilious pleuro-pneumonia of a few days' standing, during which he had taken physic of his own. There were strong grounds for apprehending speedily fatal hypostatic congestion of the lungs; and thus the necessity was urgent for a frequent change of position, in order to disembarrass the respiration. He was deeply jaundiced, while his lips were livid; petechial dots spread over the trunk and extremities; the gums were ragged, and very dark; many of the teeth loose; breath offensive; pulse 90, small, soft, and thrilling; cough urgent; sputa, which was at first intermingled with blood, now rusty; mind perfect. Auscultation was practised, but no record thereof was taken.

On the fourth day of my attendance his pulmonary disease and general condition had improved. He then insisted, as he had done several times before, that I should remove a molar tooth of the lower jaw, which was entirely out of its socket, and adhering solely by one side of its neck to the outer gums. The tooth interfered with the free action of the tongue, and was the source of much annoyance, especially in the act of coughing. I objected at first, as I had done before; but, finding that he threatened to drag it out by means of a string, I made an incision across the ligamentous attachment, which was uncommonly strong, and the tooth was separated. Some hemorrhage, greater than I could by any means have anticipated, followed; but in a short time it yielded to mild astringents. Some hour in the night I was summoned to him. The hemorrhage had returned in an alarming degree. For some forty hours, all the means calculated to arrest it were resorted to, but with only occasional and temporary benefit. On minute inspection, not only the point of incision, but the socket and all the capillaries of the gums on the right side were oozing blood, as from a recently cut surface. Compression to the socket did not, therefore, in the least arrest the hemorrhage. Indeed, it was difficult to tell where all the blood came from. At length, under the joint use of pyroligneous acid, sulphate of copper, and creasote, and a gentle tonic course, the hemorrhage was ultimately controlled and arrested. Two days afterwards a profuse intestinal hemorrhage supervened, and soon terminated in death.

9. *Neuralgia.*—Splenalgia, as formerly stated, is by no means uncommon. The symptoms are, pain in the left hypochondrium, often of a lancinating character, which extends to the spine and thorax, and may affect the entire left side of the body. These pains are periodically aggravated, but are unaccompanied with any notable degree of fever. Sometimes, in the intervals of the paroxysms only, aching pains remain in the part. It is certainly difficult to ascertain whether this affection is seated in the splenic or in the intercostal nerves, or both. Anæmia, more or less pronounced, is pretty constantly observed. Care must be taken to discriminate this from pleuralgia, gastralgia,

or the passage of renal calculi. It usually yields readily to an antiperiodic treatment, combined with some of the preparations of iron.

10. *Displacement.*—In illustration of the decadence of the splenic mass and its lodgement within the hypogastrium, it will only be necessary to refer to Case XII., and to add the following:—

Case XVI.—Mrs. ——, aged 20, sent for me in October, 1837. She had been sick several days with a low remittent fever, and complained chiefly of megrim of the right side of the head.

On examining the abdomen, the hypogastrium was found to be occupied by a hard, resisting tumour, of a triangular shape, which proceeded from the left iliac region, and extended its apex almost to the umbilicus. Beyond the limits of this mass, which was slightly movable, the rest of the abdominal surface was soft, and peculiarly so in the left lumbar region, and beneath the cartilages of the left ribs. There was no dulness on percussion over the left hypochondrium. She experienced some degree of soreness over the extent of the tumours, which soreness was increased by fever. Occasionally there had been some impediment to the flow of urine.

She had been subject more or less to splenic enlargement from her infancy, in common with others of her blood-relations, about three years, and during a severe fever her spleen became greatly enlarged. In the mean time a violent epistaxis ensued, and in its progress a marked and sudden diminution of the spleen took place in the left hypochondriac and umbilical region, with softening of the parietes of the abdomen. In a day or two afterwards, she noticed for the first time the tumour in its present situation. Since then she has married, and during her pregnancy the tumour occupied the epigastric, left lumbar and hypochondriac regions. After delivery it returned to its present locality. Examination failed to find any connection with the uterine appendages, but as the tumour was diminished under the use of quinine, and did obey the general laws ruling the fluctuations of the spleen, it seems conclusive that it was this organ in an unusual position.

This lady lived some eight years more, and died according to common report of acute enteritis; and, surely, it is not presumptuous to suppose that splenitis might have directly been the cause.

Art. III.—*The Erysipelatous Disease of Lying-in Women.* By D. Leasure, M. D., of Newcastle, Pa.

During the month of March, 1852, an epidemic erysipelas made its appearance in Newcastle and its neighbourhood, which seemed to put on features of extreme malignity from the very onset, and although not very many persons were attacked, but few of those first attacked, survived. In the early part of April, the first case occurred in my practice, though I had ample warning that I might expect it, from the number of cases that were occurring in the practice of others. The case was that of a young woman of a scrofulous diathesis, in whom, indeed, scrofula had been for years an active disease. Her throat seemed the principal seat of disease for the first five days, when the erysipelatous spot made its appearance on one cheek, from which it spread all over the face, head, and neck, and ultimately proved fatal after rendering her almost a putrid mass while yet living. During my attendance, I was obliged to make the topical applications, and otherwise handle the diseased parts myself, owing to the terror of the disease deterring any one from nursing her or dressing her sores.

On Sunday, the 11th of April, while engaged in the attendance on this case, I was called to attend Mrs. S. in her seventh labour, which was perfectly natural, and very easy, not lasting over two hours. The child was a male, apparently perfect in every respect, and healthy. I remained with the patient a couple of hours, and left her doing quite well. On Monday afternoon, about twenty-four hours after delivery, she felt occasion to use the urinal, and as there was no one to wait on her, she got out of bed, feeling remarkably strong, and stepped upon the cold floor, which was not covered by any carpet, and there she squatted over the vessel for several minutes, before she succeeded in urinating, and, on getting into bed, she had a chill, which lasted about three hours. The women who came to see her concluded that she had taken a *cold,* and treated her to hot teas, and succeeded, as they thought, in getting up an elegant heat, with a fine sweat soon following it; and so they had, but the heat was a fierce fever, and her sweat the damps of death. During the night she became delirious, and on the next morning her abdomen began to swell rapidly, her breathing became difficult in the prone posture, and it became necessary to bolster her up in the bed, and support her thighs flexed upon the body to relieve the tension of the abdominal muscles. A consultation between the nurses and the husband resulted in the determination to send for the doctor, if she was no better in the afternoon. Afternoon found her worse, and her husband came for me; and thus it was, that I saw her twenty-four hours after the rigor, and forty-eight after delivery, to all appearance in articulo mortis. She was sitting up in the bed, supported by pillows, her countenance draped with that "abdominal frown," so indicative of trouble to the physician, and danger to the patient; her pulse too frequent to be counted; her abdomen much swollen, but not tender, except over the uterus, and very little pain anywhere, except in the lumbar region; tongue moist and natural; lochia not suspended but dark, and without coagula; urine passed involuntarily, but no discharge from the bowels. She seemed verging towards coma, though sometimes she would rouse up for a few moments, and be much excited. Her skin was covered by a clammy sweat, and the circulation seemed to have nearly stopped in the capillaries of the extremities, which were cool. I was expected to do something; but what should it be? I applied hot fomentations to the bowels, gave her oil of turpentine; applied blisters on the inside of her thighs, which raised well; but, *cui bono,* she died next day. Four days afterwards, her child died of malignant *erysipelas.*

I now declined attending any more cases of labour, as I was still attending cases of erysipelas, and feared I might be instrumental in communicating the contagion to my lying-in patients. But on the 6th of Aug., in the absence of any other physician, I took charge of Mrs. ——, in labour with her eighth child, of which she was delivered at one o'clock in the morning. The labour was natural, and not protracted at all; the child was a male and healthy, and at three o'clock I left her, feeling as comfortable as the case would admit. She continued to do well till eleven o'clock on the next night, when severe chills set in, being just twenty-two hours after delivery. They continued till morning, when I was called to visit her, and saw her just eight hours after the first chill. Fever had set in; pulse one hundred and twenty-six; great deal of intense pain in the uterus; no tumefaction of the abdomen; countenance anxious and haggard, with frequent frowns and earnest staring, as if at some strange object; lochia not suppressed, but dark and dirty looking; had a presentiment that she would die; tongue natural; constant thirst and obstinate vomiting. I opened a large vein in the arm, intending to bleed *ad deliquium,* but the blood soon ceased to flow, and I did not obtain over half a pint. I tied up the arm, intending to open a vein in the other arm, but, on inspecting the blood already drawn, I found it did not coagulate, and resembled some dirty mixture that looked like anything but blood. It had not even the *colour* of blood. I deemed all efforts useless that looked towards a recovery, but gave full doses of opium to relieve the agonizing pain in the uterine region, but they gave no relief at all, till a short time before death, when, I presume, gangrene had done its work. The remaining history of the case would be but a repetition of that of the one already given. She died within thirty-six hours of the first chill. Her child died of *malignant erysipelas* within a week; and the old lady who washed and dressed her for the grave took erysipelas within five days of the time she died, and was the most hideous case of that foul disease I ever met, although she finally recovered.

Under precisely similar circumstances, I was constrained to attend Mrs. W——, on the 24th of May. She was a fine young plethoric Irish woman, in her 23d year, and in her second labour. Her labour was easy and natural, not lasting over three hours. Her child was a male, and healthy. She did very well till twenty-six hours after delivery, when she had a chill. Six hours afterwards I visited her and found her in very nearly the same condition in which I found case No. 2. I here determined to "bleed her to death" or break down the disease. I opened a vein and took half a gallon of blood. The pulse was not reduced in frequency (remaining above a hundred and thirty) but became very soft, and she seemed about to fall into syncope. The blood did not coagulate, but seemed to be dissolved. I bled no more. After running the same course, notwithstanding all my efforts—and they were not a few—she went as did the others. She died in thirty hours after the first chill.

At the same time, Dr. J. W. Wallace was attending some cases of malignant erysipelas, and the only two cases of labour he attended during his attendance upon erysipelas, were followed by precisely similar symptoms, and both died as mine did, within thirty hours after the first chill. I now made arrangements with my friend Dr. J. H. M. Peebles, for him to take charge of my obstetric practice, while I was to take charge of any cases of erysipelas occurring in his practice. Dr. Wallace also declined to attend a lying-in patient, under any circumstances, while he was in attendance on erysipelas. There were subsequently no more cases of childbed fever in the neighbourhood.

The question presented itself then to my mind, and many times since, Was it a coincidence that the only cases of childbed fever which occurred in the neighbourhood should occur in the practice of Dr. Wallace and myself, who were the only physicians in attendance upon cases of malignant erysipelas, and that our cases should occur in every instance where we attended a lying-in patient during our attendance upon the other disease, and that every puerperal case should prove fatal under precisely similar circumstances, and at about the same period of time, and that the children should die of erysipelas in two instances, and the woman who dressed one of them for the grave, should also take malignant erysipelas, and that, too, where there were no other cases of erysipelas near, it being in the country, and the patients having no communication with other cases; and that as soon as we, who attended upon cases of erysipelas, ceased to attend upon lying-in women, there should be no more cases of the malignant childbed fever?

In my own cases, it seemed probable that, notwithstanding all precautions of cleanliness, the disease might have been communicated by me, as I might, during the necessary manipulations, have introduced the erysipelatous virus into the vagina, where it became absorbed directly into the blood, and exerted its mischievous influence upon that vital fluid directly; or, it might have poisoned the tissues of the uterus itself, inducing a malignant metritis, for, most certainly in my cases, the peritoneum did not seem to become involved in the disease, till near the fatal termination. Or it might have produced uterine phlebitis, and the inflammation have extended to the veins of the abdomen, and by so changing or modifying a considerable portion of the endangium, or "membrana communis vasorum," the morbid appearances presented by the blood drawn from the arm, and the lochia should result from the diseased membrane, and not have been a disease of the blood, *per se.*

However this may be, of one thing I think I may be assured, and that is, that the diseases in question produce and reproduce each other; in other words, my cases of childbed fever were neither more nor less than cases of malignant erysipelas, fatally modified by the condition of the patients, and the manner of introducing the morbific poison.

I have been induced to report these cases mainly because I had been taught to believe that childbed fever was always "a true inflammation," and the only hope of safety lay in bloodletting. I had proved the truth, as I thought, of this theory, and verified the soundness of the practice in many a successfully contested case, but I learned that there is a disease of lying-in women, malignant in its character, which sets at naught both the theory and the practice, and if I should be so unfortunate as to meet with it again, I would rely upon the treatment which proved in my hands so successful in the erysipelatous disease, viz: brandy, quinine, and tincture of iron.

ART. IV.—*A Case of Ovarian Tumour, complicated with Ascites, cured by the large Abdominal Section and Injections into the Cavity of the Peritoneum.* By E. R. PEASLEE, A. M., M. D., Professor of Surgery, &c.

MARY JANE T——, aged 26, a member of the community of Shakers in Enfield, N. H., was first visited by me, on account of a dropsical affection, on the 17th of February, 1854, in consultation with Drs. J. Clough and S. G. Wood, of that town.

The patient was of a sanguine temperament, strong and vigorous when in health (weighing about 150 pounds), and had been accustomed to active labour, especially to dairy work. She had never suffered from any disease, except some degree of indigestion and a slight cutaneous affection.

About three years ago (March, 1851) she first noticed a general fulness of the abdomen, the left side being somewhat largest, though she has never felt any distinct tumour. During a febrile attack of a few days, the enlargement had diminished, but soon increased again. She had never had pain in the left side, except when it could be attributed to the action of cathartic medicine, and this kind of remedies had not had any effect to diminish the size.

In the autumn of 1851 she took calomel (by the advice of Dr. J. Dyer) to salivation, and this was repeated by turns for six months, during which time the enlargement somewhat diminished. No medicine was taken during the fall of 1852 and the following winter. From February to May, 1853, the patient was under the care of Dr. R. J. P. Tenney, of Loudon, N. H., who advised the application to the abdomen of the iodide of potassium in solution, and bandaging, with mild cathartic remedies. She has, however, constantly increased in size.

There has been but a small quantity of urine for three years past, unless when the kidneys were excited by diuretics. The iodide of potassium has had the best effect; and next, nitrate of potassa with gin. But no diuretic has produced any decided effect during the past year, the urine having averaged not more than eight ounces in twenty-four hours. Very little medicine, however, of any kind, has been taken since May, 1853. The skin has always been in a good condition.

The appetite is usually good; the breath has been constantly affected by the pressure of the dropsical accumulation during the last six months. She has slept well, lying on either side, but not on the back, till since she was tapped, five weeks ago, by Drs. Clough and Wood, who removed nineteen and a half pounds of a thick, ropy fluid, of a greenish straw-colour. She kept her bed a week after the operation, had no inflammation, and was much relieved by it. The circumference of the abdomen, before the tapping, was fifty inches, and only a part of the fluid (probably less than one-half) was withdrawn. After the tapping, a tumour became apparent to the touch.

At the time of my visit (February 17, 1854) the patient was in a good condition generally, except that the tongue was coated yellow and the pulse was considerably accelerated. On examination of the abdomen, I found the circumference to be fifty-two inches, there being no perceptible difference in size on the two sides. The umbilicus, however, was very prominent—nearly the size of a hen's egg—and appeared very thin and almost transparent from distension. No distinct tumour could be felt externally. She had had no return of the catamenia for three months, though, during the summer, this discharge had occurred every fortnight. She first became irregular two years ago, when debilitated by powerful cathartics.

Examination *per vaginam* demonstrated the existence of a tumour, more apparent on the right side, and evidently containing fluid. A sound introduced into the cavity of the uterus, showed this organ to be movable and of the normal size, but inclined to the left side. *Per rectum*, also, the tumour was easily perceived, and found more prominent on the right side of the pelvis. A sound passed into the bladder, showed the latter to be not displaced and not adherent to the tumour.

I therefore diagnosticated the case to be one of *ovarian tumour* (the right ovary being diseased), *complicated with ascites*, and proposed to perform the operation of paracentesis abdominis, both because it was now again demanded by the dyspnœa, and because the evacuation of the fluid would either decidedly contradict or confirm this diagnosis. I therefore, assisted by Drs. Clough and Wood, proceeded to tap the patient in the ordinary way, at the point in the linea alba midway between the pubes and the umbilicus. The discharge of the fluid was very frequently arrested by the canula becoming clogged up with a delicate membrane, almost precisely resembling tissue paper when floating in water, and of which enough was drawn through the canula, in the aggregate, apparently to cover the whole surface of the peritoneum. The operation was thus very much prolonged, sixty pounds of a clear gelatinous fluid having been withdrawn. A tumour was thus rendered very apparent, being of an ovoid figure, and having a transverse diameter of about nine inches. It appeared to be free from adhesions, being movable to the right and left in the peritoneal cavity. The diagnosis was thus in all respects confirmed.

The patient was very solicitous to have the operation of ovariotomy performed. I, however, declined to perform it for the present, and did not again see the patient till October, 1854. In the mean time, however, Dr. Clough had found it necessary to tap her four times, having removed at one time (July 20) *one hundred and six pounds of fluid*, and at another *one hundred and three pounds* (November 7). Previously to the tapping of July 20, the circumference of the abdomen was *five feet and three inches* (sixty-three inches). In the interval between the tappings, the fluid had accumulated at the average of very nearly *two pounds a day*. From September 15 to February 9 ensuing —one hundred and forty-seven days—two hundred and eighty-eight pounds of fluid were secreted, and ninety pounds during the last forty-two days. The tumour becoming apparent after each tapping, was found to be increasing in size, but apparently no adhesions had yet formed. It now, however, clearly consisted of two sacs at least, instead of one.

I found, in October, 1854, that the patient's general health had essentially failed since the preceding February, and that she was becoming much emaciated. After much solicitation, I engaged to perform the operation in the

February following, if the circumstances then seemed favourable, as I should be absent from New England till then. On the 29th of December she was again tapped by Dr. Clough, and ninety-five pounds of fluid were withdrawn.

Previously to the operation on the 7th of November, the downward pressure of the fluid in the cavity of the abdomen had so elongated the *cul-de-sac* between the rectum and the vagina, as to even cause it to protrude from the vagina, between the labia, in the form of a sac. On the 7th of November, Dr. Clough operated by merely puncturing this protrusion and passing a gum-elastic catheter through the puncture into the cavity of the peritoneum, and thus evacuating the fluid. After the cavity was evacuated, the catheter was withdrawn, and the puncture healed by the first intention. The protrusion gradually restored itself to its natural relations, and in a week nothing unnatural could be detected at the upper part of the vagina. Dr. Clough adopted the same method in the subsequent tappings, and with precisely the same results.

In a letter, dated November 10, 1854, giving an account of the first tapping in this manner, Dr. Clough adds: "I will suggest the idea that, if her case is ascites occasioned by the pressure of the tumour, would there be any chance, in your opinion, if you should introduce a gum-elastic catheter into the orifice in the vagina, when the fluid passed out, and let it remain while the incision in the abdominal wall is healing? I wish you would give this idea a little attention, and let me know what you think of it."

I replied that I had before anticipated that if I removed the ovarian sacs the ascites would not *at once* cease, since the peritoneum would not at once return to a normal condition, and that I should adopt the suggestion if I operated for the removal of the tumour.

On the 9th of January, 1855, Dr. Clough writes that he drew off ninety-five pounds of fluid on the 29th of December, and that she was now "very comfortable, walking from one room to another, and working some."

Soon after this it was definitely arranged that I would perform the operation of ovariotomy on the 12th of February, and that the patient should be tapped on the 9th (seventy-two hours before the operation), by Dr. Clough; it being done *through the vagina*, as before, and a gum-elastic catheter (corked tightly) being left projecting through the puncture into the cavity of the peritoneum up to the time of the operation.

Accordingly, on the 9th of February, Dr. Clough, assisted by Dr. Wood, operated, and removed eighty-two pounds of fluid. From seven and a half to eight pounds also afterwards escaped through the puncture, by the side of the catheter—making in all ninety pounds. No untoward symptom occurred from the operation or the retention of the gum-elastic tube, and three days after the tapping I removed the ovarian tumour by the large abdominal section, as before arranged.

Feb. 12, 1855. I found the patient very much emaciated and debilitated; indeed, her general health had begun to give way decidedly. She was, however, cheerful, and felt positive she should recover from the operation about to be performed, and had long been very impatient to have it done. As ninety pounds of fluid had been withdrawn from the peritoneal cavity seventy-two hours previously, when her circumference had probably not been less than five feet, the abdominal walls were collapsed in such a way that they could easily be carried on either side around to the spinous processes; and the distance on the corrugated surface from the pubes to the umbilicus was sixteen inches. The gum-elastic tube remained as left at the time of tapping, and a large tumour, apparently consisting of two sacs, and very movable, partly filled the collapsed peritoneal cavity.

An examination per vaginam, and per rectum, and also with both the urethral and the vesical sound, gave the same result as at my first visit a year previously; except that the tumour was now much larger, and was adherent, apparently to a slight extent, to the omentum near the liver.

The temperature of the room was raised to 80° Fahr.; the air also being rendered humid by the evaporation of hot water. The patient's bladder was evacuated, and the pudenda covered with a cloth applied like a diaper, after the pubes had been shaven. I had also prepared an *artificial serum*, similar to the natural secretion of the peritoneum, to be kept blood-warm, and into which I should plunge my hands before bringing them into contact with the peritoneum during the operation. This was made according to the following formula: ℞.—Pure water, Oiv; albumen (white of eggs), ʒvj; common salt, ʒiv.

The other elements of the natural secretion of the peritoneum being in very small quantity, were omitted. These preparations being made, the sulphuric ether was administered as an anæsthetic, and I proceeded to operate, assisted by Drs. Clough and Wood, Dr. Buzzell, of North Enfield, and Dr. Bean, of Lebanon, N. H.

The operation.—I commenced with an incision eleven inches long in the linea alba, extending upwards from the symphysis pubis, penetrating the skin and the very thin superficial fascia only. The slight oozing of blood soon ceased, and I then completed the incision to the same length through into the peritoneal cavity, from which nineteen pounds of fluid at once escaped. The tumour was thus brought into view, and seen to consist of two large sacs, with an immense number of small ones, as is usual when the tumour is not solid. On passing my hand and forearm into the peritoneal cavity, and carrying it round the tumour, I also found it adherent, to a slight extent, to the great omentum, as I had expected.

The tumour was much too large to be removed through the incision in the abdominal walls; and therefore the two large sacs, and several smaller ones, were evacuated by a trocar and canula, to reduce its size. In this way, between nine and ten pounds of fluid were removed, when it was found possible to bring the tumour through the incision. In overcoming the adhesions preparatory to this, a small artery in the bands of which they consisted was found to require a ligature. Then the tumour was drawn through the incision, and held by two assistants, while I passed a double ligature of six threads of saddlers' silk (waxed but not twisted), through the centre of the pedicle, and then cut off the latter between the ligatures and the tumour itself. The mass thus removed weighed nine pounds. Add to this the fluid removed from it as before explained (nine to ten pounds), and the weight of the ovarian mass alone is seen to have been between eighteen and nineteen pounds.

Some dropsical fluid still remained in the pelvic cavity, and this, together with all the clots of blood, I removed with a soft sponge. This was accomplished slowly, the fluid was so dense and viscid. The other ovary was seen to be in a normal condition, though very pale; but the whole peritoneum was evidently congested, and both looked and felt more like a mucous than a serous membrane.

I next closed the incision by the introduction of stout needles through the whole thickness of the abdominal walls except the peritoneum, at the distance of an inch from each other—ten in all. These were confined by the harelip suture; and stitches were also taken in the intervals between the needles.

The ligature around the small artery in the omentum was brought out through the upper end of the incision; and the ligatures around the pedicle of the tumour were passed by the side of the gum-elastic tube into the vagina before the incision was closed. No adhesive straps were applied to the abdomen, since the walls were so lax and corrugated that they would have been of no avail. Merely a compress, dipped in warm water, was laid over the abdomen, and a piece of oiled silk over that; and the patient was put into bed at 5 P. M. The ether had kept her unconscious during the operation, and no trouble had been experienced from protrusion of the bowels while operating; the walls of the abdomen had been so distended by the fluid removed at the last tapping. Besides, the bowels had been freely evacuated the day before the operation, and only milk porridge had been taken since.

I directed that the patient should make no effort to move or to speak aloud for the first three days, and that a catheter should be introduced into the bladder every six hours. The compresses were to be renewed every four hours, or before they became dry; bread-water for diet, for the present.

Progress of the case after the operation.—Immediately after being put into bed, the patient is very pale, but the eye is bright; skin covered with a cold perspiration; pulse 140, and very feeble; respiration 23. She is thirsty; complains of a restless feeling in the back, and is disposed to move the limbs too much. A bloody serum has escaped in small quantities from the tube left in the vagina. A teaspoonful of brandy to be given every ten minutes till the reaction is established, and external warmth to be applied.

8 *o'clock* (*three hours after operation*). Pulse a little stronger, and surface warmer; give brandy, with six drops of aq. ammoniæ simp. every half hour. At 9 o'clock pulse improving; gave a teaspoonful of paregoric; patient vomited freely fifteen minutes afterwards. The paregoric was repeated, and retained, and at 10 o'clock she had slept quietly for fifteen minutes. At 12 (midnight), I drew off two and a half ounces of rather high-coloured urine. Some blood-stained serum (perhaps one ounce) has passed through the tube; pulse still feeble, and feeling of faintness continues; hiccough occurs now and then, but this is common since patient has been in bad health. She is seen smiling, and chews a bit of roast-beef at her own request. On being asked if she still thought she should recover, she replied, "If I die, it will be from thirst"—as she had been allowed but little drink on account of the irritable state of the stomach. At 2 o'clock A. M. she feels uneasy, and vomits all the drink she has taken. At 4 o'clock she had slept a few minutes at a time, and had not vomited again; pulse stronger and slower, but reaction is not complete.

6 *A. M., Feb.* 13 (*day after the operation*). Has drunk cold water freely, and retained it; pulse 130; she feels better; reaction well established. At 7, drew seven ounces of high-coloured urine. At 8, cheeks slightly flushed; tongue slightly coated and dry; patient has been vomiting the water she has taken in excess, but appears bright. I now left the patient in the care of Drs. Clough and Wood, intending to visit her every alternate day for a week, if necessary. Dr. Clough visited her once or twice daily, and Dr. Wood remained almost constantly in the house with her till she was out of danger; and to him I am indebted for the remainder of this report of her progress after the operation. At 10, there has been nausea and vomiting; there is much thirst; beef-tea was taken, but rejected. 12 (noon), she looks better, and has less fever. She took twenty drops of acetum opii at 11, and has slept some, and feels better; urine, three ounces; has retained a little beef-tea. 2—she is quite restless, and has vomited again—quite a quantity of bile. 4—(twenty-

four hours after operation), there is not a single bad symptom; patient appears bright, has slept twenty minutes at a time, and has no pain; has retained some milk porridge; pulse 120. 6 P. M.—has slept more; stomach less irritable; urine, four ounces—natural. At 8, she is again nauseated, and takes twenty-five drops of acetum opii, then sleeps most of the time till 10. At midnight, drew off two and a half ounces of urine—natural; has vomited once since 10, and slept some. At 2, complains of a burning sensation in the stomach; for this, a cloth wet in cold water was applied, which removed the sensation complained of; patient says she feels better than hitherto since the operation.

6 *A. M., Feb.* 14 (*second day after operation*). Patient thinks she has slept half the night; urine, four ounces—turbid. At 8, she is still better, has taken some gruel, and has not vomited since midnight; pulse 118. At 10, pulse is 110, and stronger. 12 (noon). Patient took twenty drops of acetum opii half hour since, and is now soundly sleeping; urine, five and a half ounces. She suffered from nausea at times till 4, when she chewed some meat, and felt invigorated by it; has been comfortable on the whole; urine, six ounces at 5 o'clock. 6 P. M.—she feels tired, and is suffering from nausea; pulse also quicker again. At 8, is restless, and has more dryness and heat of the skin; has a distress at her stomach. Took quarter of a grain morphiæ acetat. at 9, and rested some; acetum opii twenty drops at 10; pulse then slower, 112; urine, five ounces. Up to 5 A. M. she had no sickness; has retained some tea; has rested at intervals; urine, five ounces, and less turbid.

6 *A. M., Feb.* 15 (*third day*). Patient has slept half of the time since midnight. Continues comfortable through the day. No nausea. Pulse 115. Urine four ounces at 10, three ounces and a half at 1; natural. I saw the patient to-day (seventy-two hours after the operation), and could not detect a single bad symptom. The alimentary canal was, in portions, somewhat distended with gas, so that the abdominal walls were not so flaccid as just after the operation; but there was no tenderness of the abdomen. Perhaps three ounces in all of bloody serum has passed from the peritoneal cavity by the side of the tube, and through it when the cork was removed. She took a quarter of a grain of acetate of morphia at 7, but did not sleep much till after midnight, on account of the distension of the bowels with gas. She then rested well much of the time till morning. No nausea. Urine, three and a half ounces at 8 P. M.; two ounces at midnight; at 5 A. M., four ounces. Pulse quicker—120.

6 *A. M., Feb.* 16 (*fourth day*). Patient looks bright and feels easy, and can take more nourishment and drink. Sleeps half of the forenoon. The pulse, however, continues at 120 all day. At 1 P. M., two ounces of urine; at 5, two ounces more; turbid. Had some burning at the stomach in the afternoon, and, becoming uneasy in the evening, took a quarter of a grain of morphia. Slept well till midnight, more than one hour at a time; the skin being moist, pulse 120, and the respiration 27. Urine, three ounces at midnight; four ounces at 5 A. M.; more natural.

6 *A. M., Feb.* 17 (*fifth day*). Patient looks well and is hungry. She feels quite happy through the forenoon, and has no distress at the stomach. More discharge by the side of the ligatures and tube in the vagina. At 10 A. M., four ounces of urine; at 1 P. M., three ounces; and the same at six. 6 *P. M.* Patient has been so comfortable to-day, and looks so well, that one would hardly think anything unusual had happened to her of late. Pulse still 120. No nausea to-day. She is, however, somewhat more dozy and heavy than would be expected. At midnight she had been somewhat restless for two or

three hours, and the burning at the stomach had returned. Urine, three ounces at 1 A. M., and two and a half ounces at 5½; more turbid.

6 *A. M., Feb.* 18 (*sixth day*). Pulse 115, and weaker. Has slept more last night than before, and says she feels well. Dr. Wood, however, observed that she still seemed heavy, and found a discharge of very fetid fluid oozing through at the upper end of the incision, by the side of the ligature around the small artery. He therefore dispatched a messenger for me, and I saw her at 10 A. M. She had not yet had the bowels relieved since the operation, and had taken half an ounce of castor oil at 5 A. M. I found the patient with a heavy typhoid expression, and the fetid viscid fluid, before mentioned, could still be pressed in small quantities through the upper part of the incision. The peritoneal cavity was also again filling, apparently, with fluid. On removing the cork from the gum-elastic tube, a small quantity of dark fluid also came through the latter. I had no doubt that the typhoid symptoms were produced by the presence of the decomposing fluid in the peritoneal cavity, and its absorption thence, to some extent, into the blood. I therefore decided to *wash out* the peritoneal cavity by an injection, and thus remove its irritating contents. Accordingly, I prepared a quart of the *artificial serum* before mentioned, and, by means of a four-ounce syringe, which fitted perfectly to the elastic tube, I injected the whole into the cavity, at the temperature of 98°. Each time the syringe was applied to force the serum into the cavity, as much fluid was at once withdrawn from the latter, by suction, into the syringe, before removing the latter from the tube. The fluid thus removed from the peritoneal cavity was very dark and fetid, and contained some clots of blood. Having used the first quart, and the fluid withdrawn being still dark-coloured, more of the serum was prepared, and used freely till the fluid from the cavity became clear again and had very little odour. The patient at once expressed herself as being greatly relieved by the injections, and became bright again. Her pulse became stronger, and remained at 115. The tongue, before darker and dry, cleared off again. She called for and chewed some meat, and, in fact, had a very comfortable day and evening in all respects. Urine, four ounces at noon; three and a half ounces at 6 P. M. As the oil had not acted on the bowels, an enema (of water, Oj, and castor oil, ℥j) was administered at 6 P. M. At 10, two and a half ounces of urine. She took brandy and water, also milk porridge during the night. No irritation of the stomach. Pulse 114, and stronger.

6 *A. M., Feb.* 19 (*seventh day*). Patient not so well the past three or four hours; has been more dull; pulse weaker, and hands cold at times. The fetid discharge again appears at the upper part of the incision. Brandy had been freely given. She had taken another tablespoonful of castor oil at 5 A. M. Urine, three ounces at 3 o'clock. I saw the patient again to-day, at 10 A. M., and found she had relapsed into the same general condition as yesterday, except that the typhoid symptoms were not so strongly marked. Suppuration was also well established around some of the needles, and I removed those which were completely loosened (five in number). I then again repeated the injections, into the peritoneal cavity, of the artificial serum, until the fluid withdrawn became clear. More clots were removed to-day than yesterday, all very dark, and with much fetor. The patient at once rallied, as before, and continued better till evening. As I left on that day to commence a course of lectures in the Medical School of Maine, I advised Drs. Clough and Wood to repeat the injections twice a day, if the symptoms seemed to require it—at all events as often as the typhoid symptoms returned, or while the fluid withdrawn remained fetid; the patient to be sustained on the most nutritious diet. In

the evening the patient began to fail again, and a cold, clammy perspiration came on, alternating with flushing of the cheeks. Drs. Clough and Wood therefore repeated the injections, and removed an abundance of clots, though without much fetor, they being redder and apparently more recent than hitherto. The bowels were also relieved this P. M. Urine, two ounces at 10 A. M.; four ounces at 4 P. M.; and as much at 9. She still continued alternately hot and cold till midnight, and then rested pretty well till morning.

6 *A. M.*, *Feb.* 20 (*eighth day*). Patient is better than since the operation. Tongue clean and red. Pulse 110, and strong. At 2 A. M., five ounces of urine; and four ounces at 5½ A. M. She takes brandy, beef tea, and milk porridge freely. At 9½ A. M., three ounces of urine. The bowels are three times relieved to-day spontaneously. A few more clots are brought away by the injection at 9 A. M. Pulse 110; stronger. Patient cheerful, and has not had a bad symptom to-day. The injection was again used in the evening, and the fluid removed was more fetid again, and continued to be coloured till a larger quantity than usual had been used of the injected serum. In the afternoon, six ounces, and at 6 P. M., five ounces of urine were withdrawn. The remaining needles were removed to-day. The wound looks well. From this time the patient evacuated the bladder independently of the catheter.

21*st* (*ninth day*). The injection was used again this morning, and also at evening, the removed fluid being still fetid, but with less colour and clots. The last was the best night yet, and she is quite comfortable all the day. Bowels evacuated twice by an enema. She takes nourishment enough. Tongue clean and moist. Three of the stitches are removed to-day.

22*d* (*tenth day*). Patient has had a good night. The injection this morning brought away many *fresh clots*, as if from a recent hemorrhage. In a letter of this date, Dr. Wood inquires: "Can the tube, coming in contact with the stump of the pedicle of the tumour removed, cause it to bleed by suction?" The patient is rendered uncomfortable to-day by a pain in the hepatic region. Bowels spontaneously evacuated, and are usually so, daily, from this date. The incision in the abdomen is completely healed, and the remaining sutures are to-day removed.

23*d* (*eleventh day*). No bad symptoms. But little fluid was injected into the peritoneal cavity this morning, and there was less colour and clots, and fetor of the fluid withdrawn. Pulse 120 for the last two days. Patient was moved to another bed.

24*th* (*twelfth day*). Some fetid fluid is drawn to-day from the peritoneal cavity; very little colour; patient decidedly improving; eats some fresh fish and potato with a decided relish; pulse still 120; no injection used after to-day.

25*th* (*thirteenth day*). Everything favourable; some fetid fluid flows through the tube from the peritoneal cavity; pulse 112.

26*th* (*two weeks after the operation*). Patient still better than yesterday; fluid from the tube as yesterday, and a slight discharge "of pus and a watery secretion" around the ligature coming through the upper end of the incision; no tenderness of abdomen. Dr. Wood ceased his constant attendance on the patient to-day, Dr. Clough assuming the entire charge of her; and she continued to improve without any reverse.

March 1 (*sixteenth day*). Patient sat up to-day, for the first time, for five minutes; is doing well. There is considerable discharge at the upper end of the incision round the ligature—thin, and somewhat fetid. The discharge through the tube in the vagina is thick and purulent; the ligatures drawn down by the side of the tube have become in some way adherent to the latter.

3*d* (*eighteenth day*). Dr. Wood writes me that both ligatures (around the pedicle) came away to-day, and that the only undesirable thing was that the discharge around the upper ligature continued. Several of the punctures made by the needles had also suppurated, and were discharging rather freely. Patient sat up ten minutes to-day.

6*th* (*twentieth day*). Patient getting stronger; sat up half an hour to-day; is eating a variety of food, with a strong appetite, and sleeping well. The discharge per vaginam (fetid for the last two days) is diminishing, as is also that around the ligature; pulse 100.

10*th* (*twenty-fourth day*). The upper ligature came away last night. Dr. Wood writes me to-day: "There is still some discharge both per vaginam and where the upper ligature came through; but I think the operation will effect a complete cure."

19*th* (*thirty-third day*). A mere purulent discharge continues from where the upper ligature came through; and that from the vagina is similar. Patient sits up an hour and a half at a time, twice a day.

30*th* (*forty-fourth day*). The patient sits up half the day at a time, amuses herself with knitting, and walks about the room. Both the opening around the upper ligature and that in the vagina have been closed two or three days; she is rapidly regaining her natural form, and all her functions but the catamenial are normally performed.

The patient called on me, fifteen miles from her home, early in June last, being perfectly well, but not yet having quite regained her usual colour or weight. I saw her again about the middle of October, and found she had very much improved in the meantime in these respects. Indeed, she assured me she was perfectly well. The catamenia had not, however, yet reappeared, and up to the 22d November this was the fact, though she has had severe attacks of headache once in four weeks. Her natural form had returned; the immensely distended abdominal walls having become gathered up, as it were, into transverse ridges. The cicatrix of the incision (which was eleven inches) was just five inches long. There has been no return of dropsy in the peritoneal cavity.

Remarks.—1. I have before[1] insisted upon the importance, in my own estimation, of a moist and warm state of the air of the apartment in which this operation is performed; since the contact of the air will not, thus, to such an extent, either *dry* the peritoneum or *chill* it, when it is exposed. But in furtherance of the object of protecting the peritoneum from the contact of the air, I imagined that a fluid resembling the natural secretion of that membrane, and kept at a blood heat, would answer an excellent purpose. I had previously tried this *artificial serum* in another case of large abdominal section.[2] I had also expected that in this case it might subsequently become useful in another way; and was not disappointed in this respect.

2. Though this was a case of ovarian tumour, *with ascites*, the patient had been tapped each time merely for ascites; that is, all the fluid drawn had been removed by the tappings from the peritoneal cavity, though the accumulation of the fluid in that cavity was probably produced by the presence and

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[1] See the April number, 1851, p. 384, of this Journal.

[2] See this Journal, April, 1855, p. 406.

pressure of the ovarian tumour. I had previously decided hereafter to evacuate either the peritoneal cavity or an ovarian sac, by *tapping through the vagina* (whether in cases of mere ascites, or in ovarian disease), provided the fluid produces such a protrusion into the vagina as to preclude any injury to vessels or other serious accident. But here was a case of rare occurrence; the fluid (of the ascites) producing a protrusion per vaginam even *externally.* In all ordinary cases, however, of ascites, or ovarian sacs, the fluid would be more completely evacuated through the vagina than through the abdominal walls, as is usual; and there is no valid ground for any apprehension that the puncture will not heal as promptly and as certainly. In this case the wound healed three times in succession by the first intention; and all the circumstances were at least as unfavourable as are usually to be met with.

3. I had also previously decided that in another case of ovariotomy, I should bring the ligatures which inclosed the pedicle through into the *vagina*, carrying them through a puncture in the *cul-de-sac* between the vagina and the rectum, and thus remove the necessity for bringing the ligatures through the original incision. This case also actually invited that procedure, since the required puncture had already been made for evacuating the peritoneal cavity, three days before the operation.

Again, in regard to this particular case, I had no doubt that if the operation was successful so far as the removal of the ovarian tumour was concerned, the ascites would not be cured at once, but the diseased membrane would continue to secrete in excess for a time, though the original exciting cause were removed. I therefore decided, as Dr. Clough suggested, to leave the gum-elastic tube projecting into the peritoneal cavity from the vagina after the operation; and, if the secretion became changed at any time so as to threaten mischief, to use injections, as was subsequently done.

It was my plan, therefore, entirely to close up the incision in the abdominal walls, and secure union throughout its whole extent, if possible, by the first intention. I was foiled in this by the necessity of applying a ligature to the artery in the omentum where the sac had adhered, and of bringing this out at the top of the incision; for I could not think of carrying it over and among the convolutions of the small intestines, to be brought out per vaginam. But the discharge that continued for six weeks around this ligature, in consequence of not being able to carry out my plan, gave no small trouble and anxiety respecting the final result. In another precisely analogous case, I should cut the small ligature as close as possible, and leave it.

4. But the *peculiar* feature of the case—so far as I am aware—was the use of injections, once or twice a day for nearly a week, into the peritoneal cavity, to wash it out, and remove the fetid fluid within. There could be no doubt that a fluid similar to the natural serous secretion, must be less mischievous than any fluid in a state of decomposition. It was also equally clear, that if two or three pints of this were injected, and the same quantity of fluid then withdrawn, the fluid still remaining after this operation must be

less mischievous, because less concentrated, than before. This expedient was therefore adopted when the state of the patient seemed to demand it, with a feeling of assurance of a beneficial result. And it was delightful to see how the patient was at once relieved for the time by every injection. I do not think she would have lived forty-eight hours from the time when the first injection was resorted to, had not *some* method been devised to remove the putrefying contents of the peritoneal cavity; and so long as they continued fetid, and the patient threatened again to relapse into a typhoid state, I consider them to have been indispensable. The peritoneal cavity was injected *ten times* in all.

But what was the cause of this fetor of the fluid, or rather of its decomposition? The clots of blood, mixed with the highly albuminous fluid, it may be said. But neither of these two elements would have undergone such a degree of change had not *air* been present in the peritoneal cavity with them. It may be said that the air entered through the tube left in the vagina. I reply, that no device could have kept the air out of that cavity. It had been laid open by an incision eleven inches long, through which sacs weighing nineteen pounds, besides fluid to the same amount (in addition to nearly ninety pounds seventy-two hours previously), had been removed. When the incision was closed, of course a large quantity of air was inclosed, to occupy a part of the space previously occupied by the contents just mentioned. Indeed, air enters the peritoneal cavity in every instance of tapping for ascites in the usual manner, unless the greatest care is taken to prevent it. But as the result is as favourable when the precautions are not taken as when they are, I have for several years omitted them altogether. Much has been said and written of the danger of admitting air into serous cavities, when the membranes lining them are secreting an abnormal secretion—as in ascites, hydrothorax, and empyema, or of suppuration in joints. I believe all this to be erroneous. A serous membrane secreting a purulent fluid, or a densely albuminous one, is no longer a *serous* membrane *physiologically;* and therefore does not suffer from the contact of air as the healthy serous membrane does. Indeed, it is found on examination in such cases—it was in this case—to resemble a *mucous* more than a serous membrane, and, like the former, it may tolerate the contact of air. Its secretion, however, will thus undergo decomposition if retained in the cavity, just as mucus does if accumulated and retained on a mucous membrane. Equally, therefore, must it be removed if it becomes decomposed, and the membrane must be cleansed if possible. It seems to me that this idea is worthy of being carried into practice in several directions, which will occur at once to the scientific surgeon.

The colourless fluid, doubtless, was still secreted by the diseased serous membrane; but whence came the clots? I think a slight hemorrhage occurred from very small vessels (and which were very abundant), distributed to the congested peritoneum, and from which pressure was removed by the withdrawal of the fluid and the tumour at the same time. And yet, the clots became too abundant on the 22d Feb., and of too bright a colour to be accounted for thus. I suspect that the unavoidable movements impressed upon the tube while injecting the fluid, loosened one or both of the ligatures, and that thus the bright colour of the clots on the 22d Feb. is to be accounted for. This will also explain the fact that these ligatures came away so soon, viz: on the eighteenth day after the operation. The ligature around the small artery, on the other hand, came away on the twenty-third day; later than would be expected, since the artery it inclosed was not more than one-tenth of an inch in diameter. The pedicle of the ovarian tumour, on the other hand, was four inches wide, and averaged one-quarter of an inch thick; and, of course, each large ligature inclosed one-half of it.

5. I have specified the amount of urine secreted during the first eight days, since I have thought that patients may be regarded as almost out of danger after the large abdominal section, while this secretion remains, or when it becomes, normal in quantity and quality.

The amounts were as follows:—

During 1st twenty-four hours after the operation	16½ oz.
" 2d " " " "	18 "
" 3d " " " "	17½ "
" 4th " " " "	13½ "
" 5th " " " "	17 "
" 6th " " " "	13 "
" 7th " " " "	11½ "
" 8th " " " "	27 "

After this sudden increase, the secretion continued abundant and natural, and the patient evacuated the bladder without the aid of the catheter. If it be remarked that the quantity during the first seven days was as great as before the operation, it should be remembered that, normally, the urine is much increased in quantity for a time after tapping for dropsy.

6. The size of this patient before the operation was greater than that of any other dropsical patient of which I have any knowledge, her circumference being at one time five feet three inches. At this time, also, she had the largest quantity of dropsical fluid withdrawn that I have ever seen recorded. Sir Astley Cooper once evacuated twelve and a half gallons of fluid, and I had also in one case removed eighty-eight pounds, or ten and three-quarter gallons. (*See* this Journal, April, 1849, p. 378.) But, in this instance, *one hundred and six pounds* were taken, amounting at least to $12\frac{2}{2}\frac{1}{2}$ gallons, or *less than one ounce short of thirteen gallons!*

The results of all the tappings previous to the final operation, were as follows:—

Nov. 29, 1853, Drs. Clough and Wood removed	19½ lbs.
Feb. 17, 1854, Dr. Peaslee, with Drs. Clough and Wood . .	60 "
May 17, " Dr. Clough	75 "

July 20, 1855,	Dr. Clough (circumference of abdomen 63 in.)	106 lbs.
Sept. 15,	" "	97 "
Nov. 7,	" "	103 "
Dec. 29,	" "	95 "
Feb. 9, 1855,	Drs. Clough and Wood . 82 lbs. Add escaped next day, 7½ to 8 lbs.	90 "

7. Finally, I would acknowledge my indebtedness to Drs. Clough and Wood. Without the judicious management of both these physicians, and without the unremitting attention of the latter to the case for two weeks after the operation, the result must very probably have been otherwise. The sisters also who officiated in turn as the nurses of the patient—Cynthia Annis, Mary Allard, and Rebecca Roberson—must not be omitted here, since they, by their kind and efficient attention, and their cheerful demeanor, did much to insure her recovery.

26 Clinton Place, *New York*, Nov. 24, 1855.

Art. V.—*Experimental Investigations, instituted with a view to ascertain the Action of Saline Solutions of different Densities upon Living Animals, and also the Reciprocal Action, through Dead Animal Membranes, of Serum, Water, and Saline Solutions.* By Joseph Jones, Student of Medicine in the University of Pennsylvania. (With a wood-cut.)

These investigations were not undertaken with a desire to support any preconceived views or theories upon the action of saline purgatives. The facts have been carefully and conscientiously reported, and such conclusions drawn as forced themselves upon my mind. I regret exceedingly that the experiments upon living animals have not been more extended. They were performed during the summer vacation, at my home, in Liberty County, Georgia, where it was impossible to obtain the requisite number of suitable animals. If Providence permit, I hope at some future day to carry out the investigations upon the action of all medicines; for I am convinced that this, although apparently cruel method, is the only one by which the action of many medicines upon the animal economy can be accurately determined. To many these experiments will, without doubt, appear cruel. Those who take this view, place more value upon the life of a brute than the determination of facts and principles which, if properly investigated, will give an insight into one of the most important of all subjects in the treatment of disease, the actions of our remedies. Without this knowledge, although the lives and feelings of cats and dogs may be spared, still that of human beings will be in danger from ignorant empiricism.

The experiments upon the reciprocal action, through dead animal membranes, of saline solutions, serum, and water, were performed at the request of, and in conjunction with, Dr. Joseph Carson, Professor of Materia Medica in the University of Pennsylvania.

SERIES I.—*Experiments for determining the action of the Sulphate of Magnesia, in solution, upon Living Animals.*

1. *Experiments with a solution made of the strength of the ordinary purging dose,* ℥j *of the salt to* f℥viij *of water.*

Experiment 1.—8 o'clock P.M., Sept. 5, 1855. Made an incision along the linea alba of the abdomen of a cat; drew forward the stomach; passed a ligature around the œsophagus, just above its junction with the stomach; punctured the duodenum; introduced the nozzle of a syringe, and threw into the stomach f℥j of the solution of the sulphate of magnesia. The duodenum was then tied between the incision and the stomach, thus inclosing completely the saline solution. The stomach and intestines were carefully returned, and the edges of the incision so closely sewed together that little or no atmospheric air could enter. Previous to the experiment, the cat had been starved for more than thirty hours; the stomach and intestinal canal were therefore completely empty. Specific gravity of saline solution, 1055. The next morning the cat appeared remarkably strong. Upon pressing the abdomen, the bladder was felt, greatly distended with urine, which had been excreted during the night, for the bladder was completely emptied during the operation. By the exertion of pressure over the region of the bladder, its contents were voided.

Sept. 7. The cat appeared strong and active, and passed about f℥j of clear yellow urine. It continued alive and strong, being able to walk about without any apparent difficulty, until 1 o'clock P. M. of Sept. 8, when its throat was cut. The experiment lasted sixty-five hours, during which time the cat, of course, took no food or drink. The bladder was distended with urine, which was collected and retained for future examination. The stomach contained f℥j, ʒijss, of a fluid almost transparent, having a slightly turbid aspect. It was to a small degree ropy, from the admixture of mucus, the presence of which was further determined by the detection, under the microscope, of numerous mucous corpuscles. Reaction decidedly acid, turning thick litmus blue promptly red. Specific gravity, 1014. Compare this with the original specific gravity of the saline solution, 1055. and we see at once that the greatest portion of the solution had been absorbed. The contents of the stomach were next evaporated to dryness, dissolved in water, filtered, and treated with the acetate of lead until a precipitate ceased to fall. The precipitate was next treated with hydrochloric and acetic acids, alcohol, and ether, to remove the carbonate of lead and all organic matter. It was next evaporated to complete dryness upon the chloride of calcium bath, and its weight accurately determined upon a delicate balance, capable of turning to the thousandth part of a grain. A fluidounce of the original saline solution, sp. gr. 1055. was also treated with the acetate of lead until a precipitate of the sulphate of lead ceased to fall. This was dried and weighed in like manner. Knowing the amount of the sulphate of magnesia contained in each fluidounce of the original solution, we are able, by the application of the rule of three, to ascertain the amount of the sulphate of magnesia corresponding to the sulphate of lead precipitated from the fluid of the stomach. The following are the terms used:—

$$\left.\begin{array}{c}\text{Weight of the precipitate of the sulphate of lead}\\ \text{from f℥j of original saline solution}\end{array}\right\} : \left\{\begin{array}{l}\text{Its corresponding weight of}\\ \text{the sulphate of magnesia}\end{array}\right.$$

$$:: \left\{\begin{array}{c}\text{Weight of the precipitate of the sulphate of}\\ \text{lead from the fluid of stomach}\end{array}\right\} : \left\{\begin{array}{l}\text{Its corresponding weight of}\\ \text{the sulphate of magnesia.}\end{array}\right.$$

Amount of the sulphate of magnesia remaining in solution in the stomach of the cat, grains 9.43.

Amount of the sulphate of magnesia, in solution, absorbed by the stomach in sixty-five hours, grains 46.09.

The intestines contained throughout their whole tract, to the rectum, an orange-coloured, tough mucus, which, under the microscope, was found to consist of mucous corpuscles and epithelial cells from the mucous membrane; also, large, irregular cells, filled with yellow matter. The superior portion of the colon and rectum was filled with soft fecal matters, the existence of which we have never noticed in a starving cat or dog not under the action of medicines. According to our investigations in these cases, the excrementitious matters in the colon and rectum are hard and comparatively dry. Their presence in this instance indicated that a purgative effect was produced by the absorption of the sulphate of magnesia from the stomach.

The amount of the sulphate of magnesia contained in the urine was next ascertained in a manner similar in all respects to that in which the amount contained in the fluid of the stomach was determined. Amount of the sulphate of magnesia excreted by the kidneys in the last twenty-four hours of the experiment, grains 11.78. The former discharges from the bladder were not examined, because they were voided suddenly, rapidly, and upon the floor. The urine examined was remarkably rich in organic constituents.

The blood of the cat was next examined. The blood-corpuscles, like those of a dog which was operated on in a similar experiment, showed the marks of inflammation by conglomerating together in large numbers, resembling piles and rows of coins. The presence of inflammation was further indicated by the amount of fibrin existing in the blood. Amount of fibrin in 1,000 parts of blood, 7.06. This is a much larger proportion of fibrin than usually exists in the blood of cats and other animals in a normal condition. The parts in the region of the wound bore the marks of inflammation. The lips of the wound had commenced to suppurate, and portions of the peritoneum had adhered to the abdominal cavity by the ejection of coagulable lymph. This was especially the case with the omenta.

Experiment 2.—10 o'clock A. M., Sept. 4, 1855. Made an incision along the linea alba of the abdomen of a dog; punctured the duodenum; introduced the nozzle of a syringe; threw into the stomach f℥j of the solution of the sulphate of magnesia; and passed a ligature around the duodenum, between the puncture and the stomach. A ligature was not passed around the œsophagus where it joins the stomach. Specific gravity of saline solution, 1055. The dog had been deprived of food and water for twenty-four hours previous to the experiment, so that the stomach and small intestines were completely empty when the fluid was thrown in. The bladder of the dog was emptied during the operation.

In the course of two hours, about f℥ss of bloody urine was discharged. At fifteen minutes before 3 o'clock P. M., four hours and forty-five minutes after the performance of the experiment, the dog vomited about f℥ss of mucus and the solution of the sulphate of magnesia. The mucus was completely incorporated with the saline solution, so that the whole mass was viscid and ropy. At 5 o'clock P. M., passed f℥jss of clear urine. At 9 o'clock P. M., passed f℥ss of clear urine.

On the morning of the next day, September 5, the dog appeared as strong as before the performance of the operation, and drank about f℥jss of water, which was vomited up in a few moments. The water thus vomited contained but small traces of the sulphate of magnesia. Although the dog vomited f℥ss of mucus with the solution, still more than one-half the original amount was absorbed, and acted decidedly upon the kidneys. f℥iij of water were again drank by the dog, and again vomited. At 4 o'clock P. M., the dog vomited f℥ij of mucoid fluid. After this it devoured, with great greediness, the muscles of a young gray squirrel (*Sciurus Carolinensis*), cut into small pieces. At 9 o'clock P. M., five hours afterwards, the greatest portion of the meat was vomited, together with a fluid which contained mucus and gave a decidedly acid reaction. This meat had been acted upon by the gastric fluid. The exterior of the largest, and the entire substance of the smallest, particles presented a soft, white, gelatinous appearance, and, when pressed, were easily crushed beneath the fingers. The dog refused to take any further nourishment, and died in a few hours. Its bowels were moved shortly before death. Owing to the time of its death, after midnight, we were compelled to defer our examination until next morning.

The stomach was distended with gas, which probably was generated by the remaining particles of meat undergoing partial fermentation after death. The bloodvessels upon its exterior were filled with blood. Its internal mucous coat was of a light purplish pink colour. The intestines were distended with gas, and contained a red, bloody, viscid fluid, which, under the microscope, contained blood-corpuscles altered in shape, epithelial cells, mucous corpuscles, large ellipsoidal cells containing granules, and irregular cells containing orange-yellow matter. Crystals, resembling the prismatic crystals of triple phosphate which occur in urine, were also present, in small numbers, in the contents of the intestines. The internal mucous coat was very red in colour. When the blood was examined under the microscope, the blood-corpuscles were conglomerated together, indicating the presence of inflammation. The blood also contained numerous minute worms, the larvæ of larger ones, several inches in length, which were packed away in great numbers in the cavities of the heart, the larger bloodvessels, and in the structure of the lungs. It may be interesting to state that this dog was extremely poor, a mere skeleton, and I found it impossible to improve his condition, although he was liberally supplied with vegetable and animal food. And it is remarkable that the docility, courage, physical powers, and tenacity of life in this dog did not appear to have been impaired by its condition, induced no doubt by the presence of these worms in the heart, lungs, and bloodvessels.

In an experiment upon the absorption of fatty matters, I operated upon a remarkably large, powerful, and intellectual pointer dog, which possessed the characteristics of this dog, a voracious appetite, without any lasting benefit resulting from the consumption of enormous quantities of animal and vegetable food. His heart contained numerous worms, several inches in length, and exactly resembling those of this dog.

With reference to the action of the gastric juice upon meat, we are aware that it conflicts with the theories of certain physiologists. We have, however, enjoyed many opportunities of demonstrating the fact that meat is digested in the stomach, and not in the small intestines. We have found in the stomach of an alligator, the bones and hair of an entire pig, without a particle of meat upon them. In the stomachs of others we have found fish, snakes, crabs, &c., in different stages of digestion; some, like the meat in the dog's stomach, slightly acted upon by the gastric juice; others partially dissolved; whilst of others little more than their bones remained. These facts have also been verified by an examination of the contents of the stomachs of snakes which feed upon mice and lizards.

We learn a practical lesson from this experiment: the œsophagus should always be tied. If this is not done, the animal is liable to vomit up the fluid injected into the stomach, and we will therefore be unable to ascertain the exact amount of the medicine absorbed.

By comparing these two experiments, we are taught the following:—

1. Solutions of the sulphate of magnesia, of high specific gravity, are capable, if retained long enough, of being absorbed in the stomach.
2. After absorption, they excite both diuresis and purgation.
3. The main channel for the elimination of the sulphate of magnesia is by the kidneys.
4. Its elimination is accompanied by an increased amount of the solid constituents of the urine.

Several other conclusions are forced upon our minds, but we will reserve their expression until after the completion of this series of experiments upon saline solutions of high specific gravities.

Experiment 3.—Ten minutes before 12 o'clock, May 25, 1855.—Opened the abdominal cavity of a cat by an incision along the linea alba, passed a ligature around the œsophagus above its junction with the stomach, introduced the nozzle of a syringe into a small incision in the duodenum, and injected f℥j of the solution of the sulphate of magnesia into the stomach. A ligature was then applied to the duodenum, between the puncture and the stomach.

A ligature was next passed around the colon, just above its junction with the rectum; the nozzle of the syringe was introduced into the puncture in the duodenum, and f℥j of the saline solution thrown into the intestines. Lastly, a ligature was applied around the intestine, a short distance below the incision, through which the solution of the sulphate of magnesia was injected into the stomach and intestines. The saline solutions were thus separately and completely inclosed in the stomach and intestines, without any possibility of their passage upwards or downwards. The stomach and intestines were returned to their natural positions in the abdominal cavity, and the incision carefully sewed up.

Specific gravity of solution of sulphate of magnesia 1053.

The specific gravity, as in all the subsequent experiments upon living animals, was accurately determined upon a delicate balance capable of indicating the weight of $\frac{1}{1000}$ part of a grain. The length of intestine inclosed between the two ligatures was three feet.

As usual the cat, before the operation, was kept without food or drink for twenty-four hours. During the operation, which occupied ten minutes, one of the small arteries which supply the intestines was cut, and speedily tied, with little loss of blood.

The bladder was completely emptied, and fecal contents discharged from the rectum during the operation. Afterwards, several times, small amounts of urine were discharged, but no more fecal matters. At ten minutes after 8 o'clock P. M., eight hours after the operation, the cat was examined. It was in an exceedingly feeble condition. The bloodvessels upon the exterior of the stomach were injected and distended with blood.

Amount of fluid in the stomach f℥j, ʒvij. In eight hours it had increased fʒvij. The fluid was without odour, and contained large quantities of transparent mucus, which was so thoroughly incorporated with the saline solution, that it poured like flaxseed tea. There were also masses of dense mucus floating about.

Under the microscope, with a magnifying power of 210 diameters, it contained mucous corpuscles and epithelial cells. The next morning numerous single cells, animalcules, were seen sporting about.

In the denser masses of mucus there were several dark looking flocculi, which, under the microscope, consisted of blood-corpuscles and coagulated fibrin. The amount of blood in this state did not exceed one or two drops, and was, most probably, derived from the nozzle of the syringe which came in contact with the bleeding edges of the wound in the duodenum. When treated with heat and nitric acid, only a slight cloudiness was produced, showing the presence of albumen in very small amount. It was, without doubt, introduced into the stomach in a manner similar to that of the blood-corpuscles.

Specific gravity of the fluid in the stomach 1026. The amount of the sulphate of magnesia contained in it, as ascertained by the method described in the first experiment, was grains 49.5. Amount of the sulphate of magnesia which had passed out of the stomach, grains 6.02. Each fʒj of the original solution held grains 6.94 of the sulphate of magnesia in solution, consequently about fʒj of the original solution had passed out of the stomach, while fʒvj of fluid from the blood had passed in. The internal mucous coat of the intestines was of a pinkish red colour, the vessels which supplied it with materials for secretion and nutrition being congested with blood.

Examination of the Intestines.—The bloodvessels upon the exterior of the intestines were filled with blood, and the whole surface was reddened. This was not the case with the surface and bloodvessels of the adjoining intestine which was not filled with the saline solution; they presented a natural appearance. The internal mucous surface was reddened, and presented numerous spots of a dark purplish-red colour.

Amount of saline solution f℥j, ʒvij. The increase of the saline fluid in the intestines was exactly equal to that of the stomach, notwithstanding that the surface exposed in the former was many times greater in extent than that of the latter.

The fluid was of a light red colour, and its odour similar to that of the fecal matters of cats, only considerably aggravated. The intestine included between the two ligatures embraced the jejunum, ilium, and the greater portion of the colon. Specific gravity of the fluid from the stomach 1022.

Heat and nitric acid revealed the presence of albumen in minute quantity.

After standing for several hours, a light coloured sediment settled to the bottom of the vessel, which, under a magnifying power of 210 diameters, consisted of epithelial cells from the mucous membrane, other large irregular cells, and a few crystals of the triple phosphate. The supernatant fluid contained these in less quantities.

Amount of the sulphate of magnesia in the fluid of the intestines, grains 41.25.

Amount of the sulphate of magnesia which had passed out of the stomach, grains 14.27.

Each fʒj of the original solution held grains 6.94 of the salt in solution, consequently about fʒij of the original solution had been absorbed, whilst fʒix of fluid from the blood passed in. In both the stomach and intestines the amount of the saline solution was equal at the commencement and end of the experiment, whilst the absorption had been twice as great in the intestines.

Experiment 4. *Repetition of Experiment* 3.—Secured in the stomach of a cat in the usual manner, with ligatures around the œsophagus and duodenum, f℥j of solution of the sulphate of magnesia. One fluidounce of the same solution was also introduced into the intestines in the usual manner and secured with ligatures.

Specific gravity of saline solution 1055.

Operation performed at 12 o'clock at night. The cat appeared to suffer considerably during the operation, but as soon as the wound was sewed up, it gave no indications of pain, but commenced, when stroked upon the head, a vigorous purring. The operation was conducted without accident, and only a few drops of blood from the cutaneous veins and arteries were lost.

Previous to the experiment, the cat was kept without food and drink for thirty-six hours, the stomach and intestines, therefore, were completely empty when the fluids were introduced.

The cat was found dead at 9 o'clock A. M. next morning.

The bloodvessels upon the exterior of the stomach were congested with blood. The internal mucous coat showed a high state of irritation, being of a purplish pink colour. Several small spots were visible of a deep purple.

The stomach contained f℥j, ʒiij, of a light pinkish coloured fluid containing much mucus. Specific gravity 1035.8. Heat and nitric acid produced only a slight precipitate. Albumen was present in an amount just sufficient to manifest itself in a feeble manner, and was, no doubt, derived from a drop or two of blood accidentally introduced during the experiment. Under the microscope, the fluid contained nucleated epithelial cells from the mucous membrane, also mucous corpuscles.

Amount of the sulphate of magnesia remaining in the fluid of the stomach, grains 44.21.

Amount of the sulphate of magnesia which had passed out of the stomach, grains 11.31.

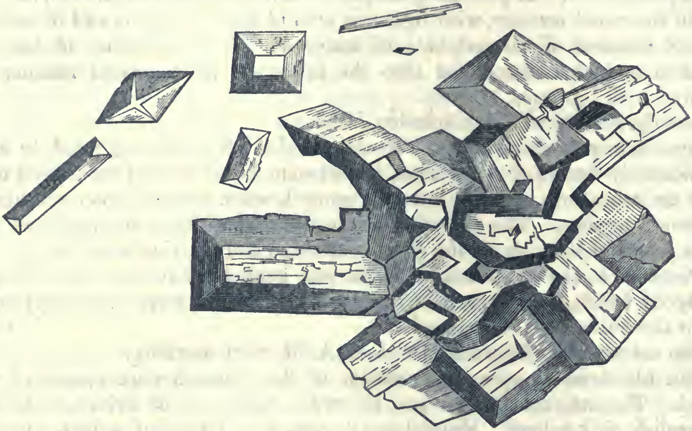
Each fʒj of the original solution contained grains 6.94 of the sulphate of magnesia, consequently fʒj, ♏xl of the original solution, or fʒiijss of the fluid in its present state of dilution, passed out.

Examination of the Intestines.—The bloodvessels upon the external surface of the intestines and in the peritoneum were congested with blood, and the whole surface was reddened.

The internal surface was coated over with thick light-yellow mucus and epithelial cells. When this was gently scraped off, the mucous coat was found congested with blood, being of a purplish-pink colour, very deep in some parts, and in others lighter.

Amount of fluid in the intestines f℥ij, ʒiv. The fluid was of a yellowish-red colour, and contained a large amount of thick mucus, epithelial cells, also granular yellow cells. Its odour was fetid, extremely disagreeable, and capable of nauseating weak stomachs. Specific gravity 1018.6.

When treated with heat and nitric acid the presence of albumen was promptly indicated. It was present in considerable quantities. In addition to the cells above mentioned, the microscope revealed the presence of innumerable crystals which pervaded the whole mass, and were visible to the naked eye as minute silvery particles. In form, the majority of them were prisms, exactly resembling the prismatic crystals of the triple phosphate of lime, ammonia, and magnesia, found in the urine of man and all animals. The accompanying figure will convey a better idea of their form and appearance than a lengthy and minute description. They were insoluble in water.



A portion of the fluid was diluted with more than six times its volume of water, and allowed to stand for more than two weeks, and, at the end of this time, they were unchanged in form or numbers.

They were insoluble in aqua ammonia and liquor potassa, and completely soluble in nitric, hydrochloric, and acetic acids. These, and other chemical tests, prove these crystals to be triple phosphate.

Amount of the sulphate of magnesia remaining in the fluid of the intestines, grains 25.48.

Amount of the sulphate of magnesia which was absorbed, grains 30.04.

If the original solution was absorbed without dilution, more than f℥iv passed out of the intestines; if, however, it was not absorbed until its present state of dilution, 30.04 grains of the sulphate of magnesia would have required an amount of fluid greater than that existing in the intestine. By comparing the effects produced by saline purgatives upon the stomach and intestines, we see that, in equal lengths of time, the intestines absorb much more rapidly than the stomach.

In the stomach, 11.31 grains, whilst, in the intestines, in the same length of time, 30.04 grains of the sulphate of magnesia were absorbed.

The increment of the fluid in the stomach was f℥iij, whilst that of the intestine was f℥xij. The effort to relieve the bloodvessels of their congestion, to dilute the saline fluid, and render its properties less irritating by the admixture of mucus, was four times greater in the intestines than in the stomach.

By carefully considering and comparing these experiments, we arrive at the following conclusions :—

1. The primary action of a solution of the sulphate of magnesia, of high specific gravity, is that of an irritant. The impression is transmitted to the nerves. Through their influence, blood is determined to the stomach and intestines. The bloodvessels are congested, absorption is consequently almost entirely arrested. The mucous membrane is excited to increased and rapid secretion of a watery mucous fluid. The objects of this secretion are to unload the bloodvessels, and dilute the internal saline solution, and thus mitigate its irritant properties.

The saline solution is not immediately absorbed; it must be first prepared, and for this, time is required. This first stage of the action of a saline purgative is analogous to that of a blister, with this difference, that mucus and excrementitious matters, instead of serum, are poured out.

2. Absorption of the saline solution, in an appreciable degree, does not take place until the bloodvessels are partially relieved, and the fluid sufficiently diluted.

The fact that absorption is arrested by a congested state of the bloodvessels, depends almost entirely upon mechanical principles. If pressure be exerted upon a fluid contained in a porous body, it tends to escape through the pores of that body. Water has been forced through the pores of a thick vessel of gold. That pressure is exerted upon the particles of the blood by some force, is seen in the fact, that the elasticity of the veins, arteries, and capillaries, has been overcome.

When the vessels are distended with blood, its flow is necessarily retarded, and, perhaps, almost entirely stopped. This stagnation of the blood, also, by a physical law, prevents the absorption of the saline solution.

Motion of the fluid, on one side, always promotes the passage through of that on the other, because it is carried away into the general circulation as soon as absorbed, the rapidity of absorption bearing a direct ratio to the miscibility of the fluids.

When the blood is at rest, the saline solution, which passes through the delicate membrane into the capillary vessels, is slowly diffused, so that we have a saline solution of almost the same strength, both in the stomach, in the intestines, and in the capillary vessels. When two saline solutions, separated by a membrane, are of the same strength, the endosmotic flow is not excited, because the end of all endosmotic action, the establishment of equilibrium, exists.

3. Living animal membranes, unlike dead animal membranes, do not allow the constituents of the blood to pass indiscriminately through them, but select, alter, elaborate, and separate, certain definite materials.

The active agents in this process are the living cells, which exert a controlling influence upon endosmose and exosmose. They elaborate, and allow to pass through their walls, only certain definite substances, the chemical characters of which depend not so much upon the foreign fluid, or substance, which excites the cells, as upon the structure, functions, and vital endowments of the cells. Hence the absorption and action of saline purgatives in the animal economy cannot be exemplified, and its laws determined by experiments performed with dead animal membranes. The question immediately arises, how do cells which are mere sacs filled with fluid, accomplish these powerful vital actions, elaborating materials often so complex in their characters, that the most learned chemists are puzzled in their analysis? This is one of the most important inquiries in science, and yet we must answer: these actions are the results of a force, the detection of which has escaped the most learned, laborious, and conscientious observers in all periods of the history of science. All the physical laws may be correlated, but the vital force stands alone.

4. The congestion of the bloodvessels, and the increased flow of thin watery mucous fluid cannot be caused, indiscriminately, by all fluids.

I inclosed common lard oil, in the usual manner, in the stomach and intestines of a pointer dog, and, also, milk in the stomach of a cat, and allowed them to remain a length of time corresponding to that consumed in these experiments. In neither case were the bloodvessels upon the exterior or interior of the stomach and intestines in the slightest degree congested, and there had been no flow of the watery mucous fluid.

5. The solution of the sulphate of magnesia, after its absorption, excites an increased flow of the urine, accompanied with an increase of its solid constituents, and also produces purgation, attended with the excretion, by the intestines, of certain effete fetid matters. The action is not confined to the kidneys and intestines, for the matters which they eliminate from the blood pre-exist in that fluid, and are simply separated by these organs.

The saline solution probably acts chemically upon the effete products of the metamorphoses of the tissues, accelerating their breaking down and removal into the general circulation, and final elimination from the blood. They may also excite the nerves and vital forces which preside especially over the metamorphoses of the organic elements of the body.

6. The absorption of saline substances is much more rapid in the stomach, whilst the effort at their dilution is very nearly equal in both, notwithstanding the disparity between the surfaces exposed to their influence. The first fact is readily accounted for, when we reflect that the office of the stomach is that of secretion rather than of absorption, whilst that of the intestines is the reverse. The fact that the stomach, with a small surface, dilutes the saline solution as much as the intestines, exposing a much greater secreting surface, proves that there is a regular standard, to which a dense saline solution must be diluted before it can be absorbed.

2. *Experiments with weak saline solutions.*

Experiment 5.—Opened the abdomen of a cat which had been starved for 24 hours, and secured in its stomach in the usual manner f℥j of a solution of the sulphate of magnesia; f℥j of the same solution was also introduced into the intestines, and secured in the usual manner, with ligatures. Specific gravity of saline solution, 1004.5.

The next morning, 12 hours afterwards, the cat was alive, and showed considerable life and strength. It was killed, and its viscera examined. The bloodvessels upon the interior of the stomach were congested with blood, those of the pyloric extremity being more congested than those of the cardiac portion. The stomach was next punctured, and its contents carefully removed into a graduated measure. It contained a large mass of dark beeswax, which was felt during the operation. Amount of fluid in the stomach, fʒvj, ♏xx. It had lost fʒj, ♏xl.

The mucous membrane appeared congested with blood, being of a pinkish red colour, and in several spots where the blood was much congested, was of a purplish scarlet colour. The fluid from the stomach was of a reddish-yellow colour. Specific gravity, 1007.7.

The specific gravity had increased instead of diminishing. This increment is, without doubt, due to the admixture of mucus. Under the microscope, the fluid contained nucleated epithelial cells and mucous corpuscles. Heat and nitric acid gave a slight cloudiness, just sufficient to show the presence of the small amount of albumen which was introduced into the stomach, in the blood upon the nozzle of the syringe.

Amount of the sulphate of magnesia remaining in the stomach, grains 5.37.

Amount of the sulphate of magnesia which had been absorbed, grains 1.29.

Each fʒj of the original solution contained grains 0.832 of the sulphate of magnesia; consequently, fʒj, ♏xxviij of the original solution must have been absorbed.

Examination of the Intestines.—The intestines presented a natural appearance, and the bloodvessels upon their exterior were not congested with blood. The internal mucous coat presented also the same natural condition. All the saline solution had been absorbed. The intestines contained ♏xxx, of a yellowish red, fetid matter, which, under the microscope, contained mucus corpuscles, epithelial cells, and other irregular masses.

The bladder, which had been completely evacuated during the operation, was about one-fourth full of urine, and had been emptied during the night, showing that the kidneys were acted upon. This experiment, like the preceding, demonstrates that solutions of the sulphate of magnesia are more readily absorbed in the intestines than in the stomach.

In the stomach, fʒj, ♏xl were absorbed, whilst in the intestines, in the same length of time, the whole amount of the saline solution had been absorbed.

Experiment 6. *A repetition of the last experiment.*—Secured in the stomach of a cat, in the usual manner, f℥j of a weak solution of the sulphate of magnesia; also, the same amount of this saline fluid in the intestines. Specific gravity, 1004.5.

The cat remained alive, and showed considerable activity and vitality during the night. Towards morning, however, it grew feebler, and expired 13 hours after the completion of the operation. The surface of the stomach showed very little more congestion than what was natural. The mucous coat showed a slight congestion, being redder than usual, but far less than the mucous membrane of stomachs which had been in contact with dense saline solutions. Its fluid contents were transparent, and contained mucus. Amount fʒvij. It had lost by absorption, fʒj. Specific gravity, 1008.

The increase in the specific gravity was, without doubt, due to the presence of mucus. When treated with heat and nitric acid, a slight cloudy precipitate took place, showing the presence of albumen in very small amount, the existence of which could be accounted for by the same accidents which occurred in other experiments.

Amount of the sulphate of magnesia remaining in the stomach, grains 6.42.

Amount of the sulphate of magnesia which had been absorbed, $\frac{24}{100}$ of a grain.

Each f℥j of the original solution contained 0.832 of a grain of the salt; consequently, 0.590 of a grain of the sulphate of magnesia had been retained in the stomach, while only pure water was absorbed.

Examination of the Intestines.—The intestines contained none of the saline solution, the bloodvessels upon their exterior showed little or no congestion, and the mucous coat presented a natural appearance. They contained, as in the former experiment, ♏xl of a dirty, yellowish-red, semi-fluid mass, having an extremely fetid odor, and composed of the same elements, and resembled in all respects the contents of the intestines of the preceding cat. The bladder contained f℥j of urine, which had been excreted during the night, for it had been completely evacuated during the operation.

By comparing these experiments with those in which dense saline solutions were used, we arrive at the following conclusions:—

1. The primary irritant effect of a weak saline solution, is much less upon the stomach and intestines than that of a dense solution.

2. The congestion of the bloodvessels being less, and the difference between the relative densities of the exterior and interior fluids being greater, absorption is much more rapid.

3. The stomach is much more readily irritated by a weak saline solution, and its consequent secretion of mucus much greater than that of the intestines.

4. The relative absorbing power of the stomach is much less than that of the intestines. This law holds good, both for dense and weak solutions of the sulphate of magnesia.

5. After its absorption, a weak solution of the sulphate of magnesia acts principally upon the kidneys, and promotes the breaking up, and final elimination of effete matter. It may also, but in a much feebler degree, excite the depurative action of the intestines.

SERIES II.—*Experiments upon the reciprocal action of Serum and Solutions of the Sulphate of Magnesia, through dead Animal Membranes.*

1. *Experiments upon the reciprocal action of serum and dense saline solutions through dead animal membranes.*

Experiment 7.—In this experiment, the serous fluid from a hydrocele of the tunica vaginalis testis was used. When heated or treated with acetic and nitric acid, the albumen was coagulated in large quantities. Phosphate of soda, liquor potassa, and phosphate of ammonia, produce no precipitate, or perceptible change. These reactions should be borne in mind during the subsequent examinations.

Introduced into 9 inches of pigs' intestine f℥iss of the serous fluid, and, securing both ends, immersed it in a solution of the sulphate of magnesia made in the strength of ℥j of salt to f℥viij of water. Specific gravity, 1056. Sp. gr. of serous fluid, 1021. Examined three hours afterwards. Specific gravity of the exterior saline solution, 1049.

Heat and nitric acid threw down copious precipitates of albumen, showing that the serum had passed from the interior and mingled with the exterior fluid. Specific gravity of interior fluid 1035. Amount, f℥iss, ♏xxx.

The serous fluid had gained by endosmose ♏xxx. The albumen in the serous fluid was completely coagulated by heat, until nitric acid failed to give the slightest precipitate; it was then removed by filtration.

The presence of the sulphate of magnesia in the fluid portion of the serum, thus freed from albumen, was indicated by the precipitate of the sulphate of lead and magnesia, thrown down by the acetate of lead, liquor potassa, and phosphates of ammonia and soda.

In this experiment, the exterior fluid had lost in specific gravity 7 degrees in the thousand, whilst the exterior fluid had increased in amount ♏xxx, and in specific gravity 14 degrees in the thousand.

The gain in the specific gravity of the serous fluid had been much more rapid than its gain in amount. These facts render it probable that, after the endosmose of the saline solution, the watery portion of the serous and saline fluids must have flowed back, leaving a certain amount of the sulphate of magnesia in a more concentrated form.

The following experiments were performed at the suggestion, and in conjunction with, Dr. Joseph Carson, Professor of Materia Medica in the University of Pennsylvania:—[1]

Experiment 8.—Secured in 12 inches of the colon of sheep having the peritoneum on, f℥j of serum from the blood of the same animal, and immersed it in a solution of the sulphate of magnesia, made in the strength of f℥j of salt to f℥viij of water; examined after 17 hours. The interior saline solution was coloured red. Amount of serum, f℥j, ♏x. The exterior saline solution gave indications of the presence of albumen, and the change in the specific gravities showed that an interchange of the fluid had gone in.

Experiment 9.—The same length of sheeps' colon, and a saline solution of the same strength were used, as in the preceding experiment; the relative position of fluids, however, was reversed, the saline solution being in contact with the internal mucous coat. Amount of solution of the sulphate of magnesia f℥j. Examined 18 hours afterwards. Interior saline solution had assumed a pinkish colour, and measured f℥vj, having lost f℥ij. The action of nitric acid and heat showed the presence of albumen. The exterior serous fluid gave indications, with the appropriate chemical tests, of the presence of the sulphate of magnesia.

Experiment 10.—Repetition of experiment 8, using the same length of intestine and the same relative position of the fluids; sp. gr. of saline solution 1053. Sp. gr. of serum, 1020. Examined after 17 hours. The interior serum measured f℥vij and had lost f℥j. Chemical tests demonstrated the presence of the sulphate of magnesia in the serum, and that of albumen in the exterior saline solution.

Experiment 11.—Secured in 36 inches of the small intestine of a sheep, not deprived of peritoneum, f℥j of the serum of the same animal, and immersed it in a solution of the sulphate of magnesia. Sp. gr. 1053. Examined 17 hours afterwards. Amount of interior serum, f℥j; it had not increased or decreased, and yet the characteristic chemical tests gave unquestionable evidence of the presence of the sulphate of magnesia in the interior serum, and of albumen in the exterior saline solution. Here endosmose and exosmose had been equal.

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[1] The specific gravities were taken with a gravimeter, and not upon a delicate balance.

Experiment 12.—The same length of intestine, and the same fluids were used, but their relative positions were reversed; the solution of the sulphate of magnesia, instead of the serum, being inclosed in the intestine. This then may be called the reverse of the last experiment (11). Examined 17 hours afterwards. Amount of interior saline solution, f℥vij. The greatest flow was from the saline solution to the serum, f℥j of the interior fluid having passed out.

By carefully comparing these experiments, we see that in four out of six, the greatest flow was from the saline solution to the serum, although the specific gravity of the former was much greater than that of the latter. In one of the other experiments, the endosmotic and exosmotic actions were exactly equal, whilst in the remaining one, the greatest flow was from the serum to the saline solution, in obedience to the law stated by numerous observers, that the flow is always from the less dense to the denser liquid. This law does not hold good when a solution of the sulphate of magnesia and serum are the fluids employed.

The relative position of the membranes exerts a controlling influence upon the passage through of fluids. This fact has been almost entirely overlooked by observers. In experiments 7, 8, 10, and 11, the serum was placed in contact with the internal mucous membrane, whilst the saline solution was in contact with the exterior serous coat of the intestine.

In experiment 7, the serous fluid gained ♏ xxx.
" " 8, " " " " ♏ xx.
" " 11, " " " had neither lost nor gained.
" " 10, " " " lost ♏ lx.

In experiments 9 and 12, the saline solution was placed in contact with the internal mucous membrane, and the serum in contact with the external serous coat of the intestines.

In experiment 9, the saline solution had lost f℥ij.
" " 12, " " " " " f℥j.

When the mucous surface was in contact with the serum, the flow of the saline solution towards the serum was retarded, and that of the serum increased.

When the mucous coat was in contact with the saline solution, its passage through the membrane was greatly accelerated, whilst that of the serum was diminished.

The fact that solutions pass much more readily out of dead animal membranes, from the interior to the exterior, might be illustrated by numerous examples. The result of these experiments demonstrated conclusively that the laws regulating the action of saline purgatives upon living animals, cannot be determined by experiments performed with dead animal membranes. In living animals their primary impression is always attended with a rapid flow from the blood to the saline solution, whilst the reverse takes place in dead animal membranes.

2. *Experiments upon the reciprocal action of serum and weak saline solutions, through dead animal membranes.*

Experiment 13.—Introduced f℥iss of the serous fluid from the hydrocele of the tunica vaginalis testis, into 9 inches of pig's intestine, and immersed it in a solution of the sulphate of magnesia having a specific gravity of 1010. Amount of saline solution, f℥iv. Specific gravity of serous fluid, 1021.

Examined three hours afterwards:—

Specific gravity of exterior saline solution 1010.

" " " interior serous fluid, 1019.

Amount of interior serous fluid, f℥iss, ♏xl.

The serous fluid had gained ♏xl, and after the careful removal of all the albumen, the appropriate chemical tests indicated the presence in it of the sulphate of magnesia. The presence of the serous fluid was also determined in the saline solution.

Experiment 14.—The same length of intestine and the same fluids were used in this experiment, only their relative positions were reversed, f℥iss of the saline solution being confined in the intestines, and immersed in f℥iv of the serous fluid.

Specific gravity of interior saline solution, 1010.

" " " exterior serous fluid, 1021.

Examined three hours afterwards.

Specific gravity of serous fluid, 1020.

" " " saline solution, 1010.

Amount of interior saline solution f℥j, fʒiij. It had lost fʒj.

The appropriate chemical tests showed that there had been an interchange of the fluids.

Experiment 15.—Introduced f℥j of serum of pig's blood, into the intestine of this animal, and immersed it in a solution of the sulphate of magnesia.

Specific gravity of serum, 1018.

" " " saline solution, 1009.

Examined five hours afterwards.

Specific gravity of serum, 1018.

" " " saline solution, 1010.

Quantity of serum, f℥j, ♏xiv.

Chemical reagents showed the presence of serum in the saline solution, and also of the sulphate of magnesia in the serum.

By comparing these last experiments, the facts are demonstrated that the greatest flow was from the saline solution to the serum.

The rapidity of this flow was moderated by the position of the membrane.

In Experiments 13 and 15, in which the serous fluid was placed in contact with the internal mucous membrane, the external saline solution in contact with the serous coat of the intestines, lost in the first (13) ♏xl, and in the last ♏xiv. When, however, the relative positions of the fluids were reversed, as in Experiment 14, and the saline solution was placed in contact with the mucous membrane, the internal solution of the sulphate of magnesia lost ♏lx. In each experiment the greatest flow was from the saline solution to the serum, but when the saline solution was placed in contact with the mucous membrane, the flow was in one instance one-third, and in the other nearly four times more rapid.

Out of 10 experiments with the serum of different animals, in which the relative densities and positions of the fluids were varied, in only a single instance was the greatest flow from the serum to the saline solution, and in this case the serum was in contact with the mucous membrane of the intestine.

From these facts, then, we are justified in laying it down as a general law, that with dead animal membranes, the greatest flow is from the saline solution to the serum, regardless of the strength of the saline solution, and this flow is greatest in the direction from the interior surface to the exterior of the membrane.

Does this physical law explain the action of saline solutions upon the animal economy? By no means. We have shown that when a strong saline solution is used, both in the intestines and in the stomach, the flow is from the blood to the saline solution, and it is not until that solution becomes diluted to a certain extent, that its absorption commences in an appreciable degree. When, on the other hand, a weak saline solution is used in the stomach, it obeys the physical law laid down. In the intestines it is totally and rapidly absorbed.

SERIES III.—*Experiments upon the reciprocal action through dead Animal Membranes, of Water and Saline Solutions of different densities.*

1. *Experiments upon the reciprocal action through dead animal membranes, of water and dense saline solution.*

Experiment 16.—Introduced into eighteen inches of pig's intestine, having the peritoneum on, f℥iiss of a solution of the sulphate of magnesia, and immersed it in pure water.

Strength of saline solution ℥j of salt to f℥viij of water, sp. gr. 1056.

Four hours afterwards the amount of the saline solution was found, by measurement, to be f℥iij, ♏xlviij. It had gained fʒiv, ♏xlviij, sp. gr. 1040. Specific gravity of the exterior fluid, which was originally pure water, 1009.

The presence of the sulphate of magnesia was also indicated by all the appropriate chemical tests.

Experiment 17.—The same length of intestine, the same strength and relative position of the fluid were used in this as in the last experiment. The only difference was that the peritoneum was stripped off. At the expiration of four hours, the internal saline solution measured f℥iijss, having gained f℥j. Specific gravity 1037. Specific gravity of the exterior fluid 1014.

This had a distinct saline taste, and, when treated with the appropriate chemical tests, the presence of the sulphate of magnesia was promptly indicated.

Experiment 18.—Into eighteen inches of hog's intestine, with the peritoneum on, introduced f℥vj of pure water, and immersed it in a solution of the sulphate of magnesia. Specific gravity 1056. Four hours afterwards the interior solution measured f℥v, ♏liij, having lost fʒvij, ♏vij. Specific gravity 1016. The appropriate tests showed the presence of the sulphate of magnesia. Specific gravity of exterior saline solution 1045.

Experiment 19.—Similar in all respects to the preceding experiment, except that the intestine was deprived of its peritoneal coat. In four hours the internal fluid measured f℥ivss, having lost f℥iss. Specific gravity 1019. Specific gravity of exterior saline solution 1037.

Experiment 20.—Into eight inches of pig's intestine, having the peritoneum on, introduced f℥j of a solution of the sulphate of magnesia, having the usual specific gravity 1.056, and immersed it in pure water for seven hours. At the end of this time the interior fluid measured f℥j, ʒiss. In consequence of its small quantity, the specific gravity was not taken. Specific gravity of exterior fluid 1008.

Experiment 21.—The same as the preceding experiment, except that the peritoneum was stripped off. Examined seven hours afterwards. Amount of interior fluid f℥j, ʒj. Specific gravity of the exterior fluid 1005.

Experiment 22.—Into eight inches of pig's intestine, having the peritoneum on, introduced f℥ij of pure water, and immersed it in a solution of Epsom salts. Specific gravity 1056. After seven hours the exterior fluid measured f℥iss, fʒj, ♏xx. It had lost fʒij, ♏xl. Specific gravity 1033. Specific gravity of exterior solution 1050.

Experiment 23. *Repetition of last experiment without the peritoneal coat.*—After the same length of time the internal fluid measured f℥iss, having lost fʒiv. Specific gravity 1033. Specific gravity of exterior saline solution 1049.

These experiments were repeated, and in every case the results were similar to those reported above, and supported the following conclusions:—

A mutual interchange of the fluids always took place, and the greatest flow was from the water to the saline solution. The rapidity of the flow depended upon the position of the membrane. The flow was greatest from the internal mucous coat to the exterior. The presence or absence of the peritoneal coat also modified the rapidity of the flow. The endosmotic and exosmotic actions were most vigorous when the peritoneal coat was absent. The rapidity of the interchange of the fluids varied with the employment of the intestines of different animals. As a general rule, it was more rapid in the intestines of the pig than in those of the sheep or cow.

The following tables will illustrate these points:—

1. Saline solution inclosed in intestines having the peritoneal coat on.

Amount of fluid introduced.	Length of intestine.	Time.	Amount gained.	Sp. gr. of exterior fluid.
f℥iij	Sheep's 36 inches	3½ hours	fʒij	—
f℥iv	Cow's 12 "	4 "	fʒij	—
f℥iiss	Pig's 18 "	4 "	fʒiv, ♏xlviij	1009
f℥j	Pig's 8 "	7 "	fʒiss	1008

2. Water inclosed in the intestine having the peritoneum on.

Amount of fluid introduced.	Length of intestine.	Time.	Amount lost.	Sp. gr. of interior fluid.
f℥ij	Sheep's 24 inches	3½ hours	fʒiij, ♏xij	1010
f℥ij	Pig's 8 "	7 "	fʒij, ♏xl	1033
f℥vj	Pig's 18 "	4 "	fʒvij, ♏vij	1016

3. Saline substances inclosed in intestines deprived of the peritoneum.

Amount of fluid introduced.	Length of intestine.	Time.	Amount gained.	Sp. gr. of exterior fluid.
f℥iiss	18 inches	4 hours	f℥j	1014
f℥j	8 "	7 "	fʒj	1035

4. Water introduced into intestines deprived of peritoneal coat.

Amount of fluid introduced.	Length of intestine.	Time.	Amount lost.	Sp. gr. of interior fluid.
f℥vj	Pig's 18 inches	4 hours	f℥iss	1019
f℥ij	Pig's 8 "	7 "	fʒiv	1033

2. *Experiments upon the reciprocal action through dead animal membranes, of water and weak saline solutions.*

Experiment 24.—Into eight inches of pig's intestine, having the peritoneum on, introduced f℥j of common salt (chloride of sodium), made in the strength of ʒj of salt, to f℥iv of water, and immersed it in pure water. Examined eight hours afterwards. Amount of the exterior fluid f℥j, ♏xl. It had gained ♏xl. The exterior fluid showed the presence of the chloride of sodium by giving a precipitate (chloride of silver) when treated with the nitrate of silver.

Experiment 25.—Repetition of the last experiment in all respects, except that the peritoneum was stripped off. Examined eight hours afterwards. Amount of interior fluid f℥j. Specific gravity of exterior fluid 1005. Here endosmose of the water had just equalled the exosmose of the salt. A copious precipitate of the chloride of silver upon the addition of a solution of the nitrate of silver, demonstrated the presence of the chloride of sodium in the exterior fluid.

Experiment 26.—Introduced into six inches of pig's intestine, deprived of the peritoneum, f℥iss of a solution of the sulphate of magnesia, and immersed it in pure water. Specific gravity of saline solution 1009. Examined four and a half hours afterwards. Specific gravity of interior fluid 1007. Specific gravity of exterior fluid 1001.5. Amount of internal fluid f℥j, fʒvij. It had gained fʒiij.

Experiment 27.—The same length of intestine and strength of saline solution were used, but the relative position of the fluids was reversed, the water being inclosed in the intestine. Examined four and a half hours afterwards. Specific gravity of exterior fluid 1007.5. Quantity of interior water f℥iss, fʒv. Specific gravity 1005. The internal water had gained fʒv.

Experiment 28.—Introduced into twelve inches of pig's intestine f℥iij of a solution of the acetate of lead, and immersed it in pure water. The intestine was deprived of its peritoneal covering. Strength of the solution, grs. iij of acetate of lead to the f℥j of water. Specific gravity 1005. Allowed to remain three and a half hours. Amount of fluid in the intestine fʒvij, ♏xii. It had diminished ♏xlviij. Specific gravity 1004. Specific gravity of exterior fluid 1002. The addition of a solution of the iodide of potassium to the external solution (originally pure water), was attended with a distinct orange-yellow precipitate of the iodide of lead, indicating the presence of the acetate of lead.

By comparing these experiments, the fact is confirmed that in every case there was a reciprocal action and free interchange of the fluids upon opposite sides of the dead animal membranes.

Upon a comparison of these experiments with those in which strong saline solutions were used, it will be discovered that the influence of the presence or absence of the peritoneal coat, and of the relative position of the membranes, is not exerted in a definite manner when weak saline solutions are used. Also, that the reciprocal action of water and weak saline solutions through dead animal membranes, is not governed by the same fixed laws as the interchange of water and dense saline solutions.

When compared with the experiments upon living animals, the fact is conclusively demonstrated that the laws which regulate the action of saline solutions upon living animals, cannot be demonstrated or illustrated by experiments performed with dead animal membranes.

If this paper should convince the mind of those who peruse it of only this one fact, and lead careful observers to experiment upon the action of medicines in living animals, and not with dead animal membranes, we will feel amply rewarded for all our labours.

ART. VI.—*Rupture of Uterus—Cæsarian Section three months and six days after—Subsequent Recovery.* By H. A. BIZZELL, M. D., of Clinton, N. C.

MRS. TAYLOR, of Sampson County, N. C., aged 24 years, married; weighs 104 pounds; dimensions of pelvis full three inches both antero-posterior and transverse diameters; no deformity.

This lady underwent the operation of gastro-hysterotomy in March, 1852 (so she says), being her first confinement. She then lived near Fayetteville, in Cumberland County, and called a Dr. M., who, she says, visited her, soon ruptured the membranes, and let the waters escape.

Both Mr. and Mrs. Taylor say, that after the doctor ruptured the membranes, a hand of the child presented, and that the doctor then gave her a tea to drink that resembled coffee, and there was something at the bottom of the cup that looked like coffee-grounds. That Dr. M. did not say she was too small, but that the child was too large. The doctor introduced his hand into her womb, and when he withdrew it told her he had broken the child's neck, and also its shoulder. The old lady who dressed the child, the grandmother of Mrs. Taylor, says that one side of the face, one shoulder, and one arm, looked dark as if bruised. Finally, she says, Dr. M. told her she must submit to being cut open if she expected to live, and if she would not submit to that, he would leave her as she was. She gave her consent reluctantly, and, on the next day, Drs. M. and McS. came and gave her something to put her to sleep, and then cut the child out of her. The operation did not give her much pain; she lay on her back for fifteen days before she was permitted to turn over; the doctors were very kind to her, visiting her frequently; she could not remember how long before she was able to walk. The doctors told her she would never be so again.

Eight months after this she says she was delivered of a small fœtus, which she exhibited to us. It (the fœtus) is male, and sufficiently developed for the sex to be readily distinguished. She says the same physicians attended her then, and seemed to take great interest in her case.

On the 12th day of May last (1855) I was called to see Mrs. Taylor for the first time in consultation with Dr. David Sloan, a young physician of fine acquirements, who resides in the lower part of this county, on South River. On that day he gave me, partly from memory and partly from notes, the following history of the case since she came under his charge:—

About January 1st she engaged the services of Dr. Sloan to attend to her in her accouchement, which she expected about the middle of April.

Feb. 7, 9 *o'clock A. M.* Dr. S. was called to her; found her with symptoms of colic, vomiting bilious matter; as this continued, he remained with her all day; gave her lime-water mixed with spring water; he had no milk. About 2 o'clock P. M., on that day, she spoke to Dr. Sloan in a very anxious and excited manner, and said she was "tearing in two." The doctor stepped to the bedside, put his fingers on the radial artery, found her pulse fluttering and very weak. She then remarked that something had torn inside of her, and that she should soon die. Having no brandy or wine near, he gave her small doses of the tincture of camphor every fifteen minutes; and after giving some two or three doses she began to revive, and in the course of thirty or forty minutes reaction was pretty well established. He then made an examination per vaginam, found the os uteri slightly patulous, and some hemorrhage from the uterus. Soon after this, finding she had no alvine evacuation through the day, he gave her an enema, which was followed by a discharge of fecal matter. During that evening he examined her several times per vaginam, and found the same condition of things as before—os uteri patulous, slight hemorrhage. She had no pain after the tearing sensation, but was very restless.

8*th*, 9 *o'clock A. M.* Visited her again; found the uterus in the same condition; slight hemorrhage; difficulty in voiding urine; pulse nearly natural. I think at this visit he also discovered some secretion of milk in the mammæ. He ordered her to have spt. eth. nit. in flaxseed tea. 6 *o'clock P. M.* Found her in the same condition; no action from the bowels; continued the same treatment.

9*th*, 9 *o'clock A. M.* Saw her again; found the uterus as before; pulse quicker; tongue furred. Ordered calomel grs. viij, rhubarb grs. x, four hours afterwards to be followed by an enema. Soon after the injection she had two or three copious tarry evacuations from the bowels. He then continued with her all day, giving the sweet spirits of nitre in flaxseed tea as before, and applied cold cloths to the region of the uterus. He also examined her both with the stethoscope and immediately, and could hear the fœtal heart. Mr. Taylor also says he heard it at the same time. He now noticed, for the first time, slight shrinking, and also flattening of the abdomen.

10*th*, 9 *o'clock A. M.* Found her with some fever; slight discharge from the uterus; had had several discharges from the bowels during the previous night.

11*th*. Pulse slower and stronger; tongue cleaning off; less fever. Gave neutral mixture, and ordered rhubarb and magnesia if she should need a purgative.

13*th*. Found her nearly as he had left her, and continued the same treatment.

15*th*. She had passed some coagula from the uterus; hemorrhage increased; could see the abdomen was still shrinking. Gave pills, opium, and plumb. acetas.

17*th*. Hemorrhage nearly ceased; little fever; pulse quick; bowels costive; discontinued the opium and sugar of lead; continued the neutral mixture.

20*th*. Found her clear of fever; had been up walking about the house; hemorrhage had ceased; prescribed castor-oil to keep the bowels soluble until he should see her again.

He continued to visit her about once a week from this time until the 20th of April, and she still continued to have occasional attacks of hemorrhage from the uterus.

April 28. Found her with some fever, and a yellowish offensive discharge from the uterus. The appetite had been good for the last month, and there continued to be some milk in the breast up to this time.

30*th*. More fever; coagula had been discharged from the uterus, darker and more offensive to the smell.

May 2. Found her with some fever; offensive discharge from the uterus. Examined per vaginam with four-valved speculum; found a substance protruding from the os uteri about an inch long, and as large as the end of the finger, resembling liver. Gave her pul. ergota grs. x, four times per diem, and kept up this treatment for every alternate day about eight days, during which time there were substances discharged resembling partly decayed lungs, and, on one occasion, something resembling a piece of funis, about six inches long, and as large as a goose-quill. Also another substance resembling brain, mixed in a bloody and very offensive serum. She had now commenced to have fever and exhausting night-sweats.

6*th*. I was invited to see her by her brother, but could not do so. On the 8th, Dr. Sloan requested me to meet him on the 12th in consultation, which I was able to do.

12*th*. On my first visit I found her in a miserable condition, labouring under a discharge from the uterus of the most offensive character, which appeared to be a mixture of bloody serum, pus, and partially decomposed brain, hectic fever, and colliquative perspiration. As the weather was becoming warm, swarms of flies were buzzing around her bed and through the room; pulse 100; pale and sallow complexion. On examination per vaginam the parts were somewhat inflamed and very tender; resulting, I supposed, from the contact of the discharge. It was with some difficulty that a speculum could be introduced on account of the tenderness of the vagina; but we succeeded in introducing a valvular speculum, through which we could see the os uteri in its natural situation, with the exception of its being slightly elevated, which caused us to have to depress the handle of the instrument after its introduction in order that the os might glide into the speculum. Through the speculum, and into the uterus, I introduced Simpson's uterine sound, but could not rotate it; the sound led us nevertheless into error, as the sequel will show. The sound passed with the point directed upwards to the depth of six inches, and a partial rotation only could be effected, which was attended with an increase of the discharge above mentioned, and some pain also to the patient.

As the os uteri was not sufficiently dilated to introduce more than the end of a finger, and still some hard substance could be distinctly detected there, which seemed as if it might be the head of a fœtus enveloped by a dense and thickened membrane, it was determined, upon reflection, that we introduce the perforating scissors, perforate this body, be it what it might, and thus encourage its discharge. An effort was made, but without effect, the mouth of the organ being too small to admit the introduction of that kind of instrument. We then tried a pair of straight sharp-pointed scissors from a common pocket case, and using the forefinger of the left hand as a director (without the speculum, of course), and the scissors in the right, they were introduced to the depth of two or three inches into the uterus without a great deal of pain to the patient; but some complaint was made by her. There was but little, if any, increase of the discharge from this expedient, but some blood. We then retired for an additional conversation; both agreed that she must die if not soon relieved, and Dr. Sloan requested me not to leave until something should be done in the way of relief, as he had been attending to her for a long time at some expense and great disadvantage to himself without the slightest prospect of any remuneration. We agreed to dilate the os uteri with a cutting instrument until a finger could be introduced, as that had been done in labour with no bad effect (see the *American Medical Journal of the Medical Sciences*, vol. xxi. p. 342), by W. P. Johnson, M. D., of Washington City, D. C.; also, *Charleston Medical Journal and Review* for May, 1854, p. 300, by James M. Grew, M. D., of Macon, Geo., and others by the same author.

We immediately proceeded to dilate the os uteri with a bistoury through the speculum sufficiently to introduce the end of the forefinger up to the second joint, when, by examination, the body of the uterus was found to be lying up against the pubes, contracted down to nearly its natural size, containing nothing, and hardly admitting a digital extremity into its cavity. From all that had preceded, it seems to me that no person could entertain a reasonable doubt of the state of things at that time. We were then sure that there had been a rupture of the uterus, and that the fœtus had escaped into the peritoneal sac, which subsequent investigation proved to be the case.

We then retired for the purpose of additional consultation relative to her condition, and resolved to make a plain statement of facts to her, to tell her the real danger she was in, the difficulty which would attend an operation for her relief, &c. &c., and to abide her decision—that is, if she said operate, we would do so, and if not, we would try supporting measures until death should kindly relieve her of her sufferings.

Accordingly we presented the case to her as nearly in its true light as we were capable of doing, and she urged us to operate, and to do so soon, for if she had to die she wished to do so now rather than to remain in that condition and "die slowly," to use her own expression.

It was as unfavourable a case as any person could well imagine. The patient had but one room, and not even the most common conveniences of life, no servant or other person to attend to her wants, except a husband, who was in bad health at the time, and an old grandmother, who was very feeble.

But this was the only thread of life to which expiring hope could cling, all that promised relief from tormenting pain and death. Should we have refused to do the last kind office for a poor creature in such a condition?

We could not—we did not refuse her! I, for one, am of the opinion that when there is but one thread of life to which a poor dying mortal can possibly cling, that such a person should have the advantage of that one. Humanity demands it; the present state of the medical sciences demands it; and all of our better feelings demand it!

So the 14th day of May, two days after that time, was fixed on for us to perform the operation (the next day being Sunday), and each of us was to invite every physician we could to witness the same. She enjoined strict secrecy upon us, except to physicians, saying that, if her people found it out, they would remove her to some place where we could not find her.

Accordingly, at 9 o'clock A. M., May 14, there met on the premises, W. G. Micks, M. D.; Allman Holmes, M. D.; James A. Bizzell, M. D.; and myself, all of Clinton; J. B. Leavey, M. D., of New Hanover County; David Sloan, M. D., of the lower part of Sampson County, and Messrs. Campbell and Hobbs, students of my brother and myself.

It was proposed that the other physicians be requested to examine the patient, and that we have their opinion, even at that late hour, before proceeding to such an operation.

The patient was examined by most, if not all of them, and Drs. Micks, Holmes, and my brother, Dr. J. A. Bizzell, opposed the operation, objecting on the grounds that no course of procedure could possibly lengthen the patient's existence beyond a few days, and she would be subjected to this torture for no benefit.

Dr. J. B. Leavey favoured the operation, and said she had nothing to lose, and he should like to see the operation performed.

The question was again and again put to her: "Do you desire that this operation be performed?" To which she invariably gave an affirmative answer, and even went so far as to say she believed she would recover if we would take the child out of her.

After hearing these ardent wishes expressed, all came at last to a tacit agreement that the operation should be performed. We had come to the conclusion before, that the operation should be performed in the median line, that is, in the linea alba, and immediately in the old cicatrix. It was determined that I should make the first incision, should cut down to the peritoneum, and through that tunic, and that Dr. Sloan should complete the operation, it being his patient.

Having determined, also, that Dr. Leavey should extract the fœtus, my brother administer the anæsthetic (which was to be a mixture of chloroform and ether), and that Drs. Micks and Holmes should render such other assistance as they should see necessary, we proceeded immediately to the operation.

There being no table or other suitable place at hand on which she could be placed, we took the bedstead, on which the patient was lying, and removed it to the middle of the house, placed some old quilts over her bed, placed her upon them, and exposed the abdomen.

There seemed to be a hernial tumour as large as an egg, about half way from the umbilicus to the pubes, resulting from the imperfect reunion of the former wound. The tumour, at present, seemed to be only an inch or so above the umbilicus, and then to terminate abruptly, with a very rapid inclination backwards and upwards.

Near by, on a chair, we placed two or three broad-pointed bistouries, a director, a curved probe-pointed bistoury, a tenaculum, a female catheter, a sharp-pointed bistoury; also, sponges, warm water, wine, adhesive strips, a crooked needle armed with a ligature, &c.

Dr. J. B. Leavey now took a common cotton string, wet it, and then with soot from the chimney blackened it, and with this drew a black line from the umbilicus to the pubes (the original wound made in the first operation having passed around the umbilicus and above that point).

Before the patient had well gotten under the influence of the anæsthetic, with a broad-pointed bistoury I commenced to make the first incision, but had to desist for a short time; I then proceeded to cut down to the depth of an inch, and, as I thought, through the peritoneum, but subsequently I found I had not cut down to it, much less through it.

Dr. Sloan then proceeded with a director, and a narrow, sharp-pointed bistoury, to cut several layers of adipose and cellular tissue, before he entered the peritoneal sac.

The structure was so altered by the manner in which the old wound had healed, that our knowledge of anatomy was of but little service to us, so that the parietes of the abdomen were much thicker than usual, and when I had cut down far enough to be through, I had only cut through the thin tendons of some of the abdominal muscles. There seemed to be several sinuses into which the director passed readily and easily, and which very much complicated the operation.

As soon as the peritoneal sac was opened, there was a gush of sulphuretted hydrogen, which brought with it a bloody serum, particles of brain, pus, &c., into our faces and on our clothes.

A large quantity of the above offensive mixture soon escaped by the small orifice, and Dr. Sloan, with a curved probe-pointed bistoury, enlarged the opening down to the pubes; this done, a male child, with the dorsum next the abdomen of the mother, presented, which Dr. Leavey lifted out.

During the operation, two small arteries sprang; the first was stopped by Dr. Leavey, who applied caustic; the second by Dr. Holmes, who compressed it between the thumb and finger.

The abdomen was then cleaned out by sponges and warm water, one of the parietal bones of the fœtus being found detached and remaining after the child had been delivered.

The laceration in the anterior part of the uterus was now to be seen, and some of the medical gentlemen present (myself among the number), passed a finger through this into the vagina.

The intestines did not appear to be in our way, but this can be accounted for, inasmuch as the patient had taken but little nourishment for a great while, and this putrefying mass was much lighter than the viscera, which were, of course, flaccid, and somewhat paralyzed by the presence and contact of such a mass.

The wound was now closed, and three stitches of interrupted suture were made by Dr. Sloan, after which Dr. Micks applied, in a beautiful manner, strips of adhesive plaster, about an inch wide and twelve inches long, between the stitches. Over this was placed three or four doubles of patent lint, and then a bandage around the body, which had been previously prepared, with tapes fastened to each end obliquely, so as to cause it to fit well, a bandage which is not unlike some that are used for ladies, after delivery, *per vias naturales.*

I should not forget to remark here, that on two or three occasions, during the operation, the breathing became laborious, and had not the anæsthetic been discontinued at such times, I think the breathing would have entirely failed or ceased. She also vomited.

We gave the patient small portions of wine and water, and she soon recovered from the shock, so much so that she talked pert, and the pulse was only 113 to the minute. She then expressed herself as feeling as well as she could expect, and again said she thought she should recover.

Dr. Sloan attended to her after-treatment, except a visit from myself or my brother, Dr. James A. Bizzell, every second day, for one week after.

We had expected to be compelled to follow a stimulating course of treatment, in her case, from this time until the wound should cease to suppurate, but Dr. Sloan soon discovered that anything of that kind seemed to make her worse, and used only barley water, and occasional enemata, which served to relieve the bowels.

May 16*th*. Saw her at 8 o'clock, with Dr. Sloan. I drew off the urine. Found the pulse to be 96. She was quiet, and tongue moist.

18*th*. Dr. James A. Bizzell saw her, with Dr. S., as I was indisposed, and reported her as doing well.

24*th*. I saw her again; she had lost some flesh. One of the stitches had come away; the others were loose, the wound suppurating freely.

For the first week, Dr. Sloan saw her twice every day (as he resided within three or four miles of her, and I eighteen miles off).

The Doctor informs me that he continued the same treatment—barley water as diet, enemata to relieve the bowels, and catheterism to relieve the bladder.

He says, in a few days after the operation, the whole vulva became heated and somewhat tumid, to which he made cold applications.

For the second week after the operation, Dr. S. saw her once per day; used only cold water dressings, and continued same treatment as before.

At the end of the third week she had bilious diarrhœa, which Dr. S. relieved by a small dose of calomel, followed by rhubarb and magnesia.

At the end of the fourth week she menstruated for two days; after that she was allowed chicken-water and gruel.

After the fifth week she took chicken and other animal food.

July 5. Dr. Sloan left her well, and was not to see her any more unless sent for.

September 9*th*. Dr. Sloan and myself visited her. She looked well, except a little anæmic, for which we prescribed iron. The hair had fallen off; a new crop coming; cicatrix looks quite firm and well.

Remarks.—1. The allusion to the medical gentlemen of Fayetteville, in connection with the former operation upon this lady, is made with perfect respect to them. I know nothing of my own knowledge about the causes which led to the operation, and only give the statements of the family as they were given to me and others.

I have addressed a letter to one of the gentlemen, inquiring into the causes, &c., but have received no answer. If the case has ever been reported, it has escaped my notice.

2. The introduction of the sound through the laceration, instead of its passing tc the fundus of the uterus, leads us to suppose that the uterus was large and capacious.

3. The os uteri was elevated in consequence of this large mass having been forced down between the uterus and rectum (or a portion of it at least), in the act of defecation by the abdominal pressure.

4. It is quite plain that the sharp scissors must have passed entirely through the posterior wall of the uterus, when used by us before the operation, to perforate the hard body which we supposed to be the head of the fœtus, and which really was the head, with the uterus interposed.

[In the number of this Journal for May, 1838, will be found an account by Dr. Fox, of a case in which the Cæsarian operation was performed a second time on the same patient by Prof. Gibson, Emeritus Professor of Surgery in the University of Pennsylvania.—Ed.]

ART. VII.—*Cases of Placenta Prævia.* By W. DENNY, M. D., of Ellicott's Mills, Howard County, Maryland.

CASE I.—*February* 22, 1823. I was sent for to see Mrs. ——, the mother of two children. I found this lady sitting at the fire-place warming her feet. She stated that on rising from bed she had had an active pain, which ruptured the membranes and discharged the amniotic waters with a gush. For an hour or two since, she had experienced neither pain nor discharge; no mention was made of blood being lost, either anticipatory or concurrent with the setting in of labour. Placing herself in a convenient posture on the bed to undergo an examination, she said: "I am flooding furiously." I found the vagina relaxed, and the os uteri dilated. The placenta was centrally implanted over the orifice, its anterior half detached from the pubic lip of the womb, lying loosely, and, from the interspace, blood flowed freely. I insinuated my hand easily into the vagina and through the os uteri into the cavity of the latter organ, which was flaccid enough to allow me to make search for and grasp the feet with perfect ease. I promptly turned the fœtus, and brought down its buttocks to the pubic aspect of the maternal pelvis. The external hemorrhage instantly ceased. Dizziness, tinnitus aurium, pallor, and failure of the pulse, announced the approach of syncope. In a few seconds she rallied, and an active contraction of the womb took place.

A somewhat tedious parturition ensued with the case rendered footling, and, after two or three hours, a stillborn child was delivered. The secundines soon followed with permanent contraction of the uterus, and the patient's getting up was without drawback, being much better than in her two former confinements, as she represented, and better also than in her recoveries from three or four of her deliveries, on which I afterwards attended.

CASE II.—*June* 11, 1831. I was sent for to see Mrs. ——, who had had seven or eight children. I found her flooding at the onset of her labour, having had no anticipatory hemorrhage. The os tincæ was dilatable, the placenta over it half detached. The pains of labour were not suspended. My fingers entering the womb discovered a footling presentation. I brought down the feet, and the delivery was accomplished without disaster; the infant, to the best of my recollection, being born alive.

CASE III.—*January* 31, 1847. I was called to a servant girl who was at the end of the sixth month of pregnancy, and threatened with premature labour with considerable hemorrhage. I think she had borne a child before. She was lying on a pallet which was transuded with blood, and that fluid was running along the planks of the floor and settling in a puddle at the far end of the room. Her circulation did not sympathize with the loss. Her pains were active. On examination, I found the vagina too narrow and unrelaxed to venture upon the violence of introducing my hand. The os uteri was fully dilated, and one edge of the placenta was protruded largely through it. Believing that I could not safely pass the hand, and, if I did, that I should be completely foiled in attempts at version; and finding nature was making efforts to empty the womb with fair prospects of success, I determined upon a negative course, the propriety of which became more and more manifest in the progress of the case, with a diminution, or, at least, absence of increase in the hemorrhage, and especially as the pulse maintained its force. A reversed delivery of a stillborn fœtus took place, viz: placenta first, and fœtus afterwards, when the womb contracted permanently, and shrunk so as to insure a favourable recovery.

Case IV.—*March*, 1854. Mrs. ——, the wife of a very intelligent physician, one of my most intimate and highly esteemed friends, in her fifth pregnancy, expected her confinement early in April. She was taken in her carriage, proceeding homeward, with some anomalous feelings, along with anticipatory hemorrhage, on the 25th of February. I visited her on the 28th of that month, and advised quietness. A second hemorrhage occurred on the 15th, and a third on the 26th of March. On the 19th, I made a cautious examination, and came to nothing more than negative conclusions. The cervix uteri was not yet obliterated, but not being able to ascertain the presentation of the fœtus, either through the anterior lip of the womb or within the circle of the os tincæ, I became suspicious of placental intrusion, which, however, was not positively ascertained. On the night of the 26th, the flow had been arrested by the use of the tampon, and I was induced at first to postpone an examination. At length the tampon being cautiously removed, and no hemorrhage occurring, I found the os uteri crossed from behind forwards by the edge of the placenta, the os itself not at all impressed by any parturient effort, although the abdominal tumour felt tight to the touch externally, and I thought I could recognize some rhythmical contraction.

Leaving her on Monday morning, March 27, I remarked to her husband "that our case was one of partial implantation of the placenta on the circle of the os uteri on the left side, and, therefore, whenever the labour shall come on, which was close at hand, we may look for unavoidable hemorrhage with the earliest throes. Should the passage admit, can you so far command yourself as to enter your hand into the womb, seize the feet, and turn?" He replied, "I cannot." "Then if hemorrhage again returns, whether anticipatory or concurrent with labour, plug the vagina completely, and send for me at once."

About 10 o'clock P. M., his carriage came for me and landed me at his door, four miles distant, about an hour from the date of the message. Some active throes had commenced the labour with profuse sanguineous discharge, the pains subsiding upon the loss, and the hemorrhage restrained or concealed by two well-applied plugs, one shutting the os uteri and the other blocking up the os externum. I found her pallid, her pulse accelerated and somewhat feeble, but without any marked exhaustion. Her pallor might be occasioned partly by alarm, besides which she always had presented it in all her previous confinements in which there had been no hemorrhage. She complained of uneasiness in the bladder, for which I attempted, ineffectually, to pass the catheter without disturbing the plug. The lower one was accordingly removed, and I proceeded to make an early examination by passing a finger by the side of the upper tampon to ascertain the state of the os uteri, as well as to judge of the flow, which might ensue upon its removal.

Some slight drainage was all that now proceeded from the womb, whose orifice was about the size of a half dollar. I insinuated my left hand through the vagina to determine, as I proceeded, whether I could safely enter the womb or not. The hand found considerable resistance in passing the os externum, and gave a good deal of pain, but the fingers, concentrated into a cone, entered the os uteri without either difficulty or distress. My fingers passed on the free side of the uterine orifice, and I recognized a presentation of the head; occiput to left acetabulum; my hand was somewhat upon the abdominal aspect of the fœtus, and on the fœtal side of the ovum. Advancing gently, I traversed the thoracic extremities which moved as with life.

I now reached a foot, doubled downwards towards the umbilicus, of which I immediately obtained command. Finding it enveloped by the membranes unbroken, I tried to rupture them to evacuate the water in order to diminish the bulk of the ovum. But they were so tough, as well as flaccid, that I could not succeed. I accordingly brought down the foot, and ruptured the membranes afterwards; a very small portion of water was discharged, the larger amount being still in utero beyond the fœtus, whose body or breech closed the os uteri completely.[1] All external hemorrhage had entirely ceased, and I looked anxiously, and confidently, too, for contraction of the womb, responsive to the stimulation of the version performed.

I remembered with what lively satisfaction I contemplated the womb contracting from its inertness upon the turning of the fœtus in Case I. That organ, in the present case, showed no disposition to act; accordingly, I gently and perseveringly proceeded to assist the passive exit of the fœtus from the cavity, and gave the patient ʒss of ergot in powder.

I have had more experience with this agent than it is, perhaps, creditable for me to acknowledge. D. D. Davis, of the London University, pronounced it inert, and that the effects attributed to it by others were concurrent with, and not consequent to, its administration. But all who, like myself, have used it more freely in the early years of practice, than we have deemed prudent under advancing experience, refrain from using it, not because it has proved inert, but because we have sometimes found it too powerful, without that power being afterwards within control. Normal rhythmical labour consists of full contractions of uterine muscle, with complete relaxations intervening. This last allows to the placenta its easy performance of duty for the fœtus in lieu of its pulmonary apparatus. The placento-pulmonary office of this appendage can no more be dispensed with by the fœtus in utero than can the lungs of the child with the atmosphere after its birth. Administer ergot, and you induce *spasmodic contraction*, which consists not only of increased effort in uterine muscle, but also in a protracted duration of the contraction, intruding on the period of relaxation or annulling it altogether. The fœtus, therefore, may be born asphyxiated. In cases of atony and consequent hemorrhage, where an infant has been duly delivered, and, therefore, safe when ergot acts efficiently and promptly, the spasmodic action induced merges into that permanent shrinking of uterine tissue which does away with the atony of the organ, and will arrest *post partum* hemorrhage by the *modus operandi* exerted by the surgeon's tourniquet or ligature. But, unfortunately, ergot may fail, certain European accoucheurs say, especially in atonic conditions induced by losses of blood; ergot having a general depressive influence along with its special agency upon the womb in labour. Thus it fails us sometimes at the point of our utmost need.

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[1] It would have given me more satisfaction, in my cross-examination and criticism of myself, if the ovum had been lessened by evacuating the womb of its water. My finger failing to rupture the membranes after gaining command of the foot, this might have been effected by a female catheter, or its wire, or a probe, all which I carried in my pocket. But finding the version easily performed, a sense of triumph over our danger came over me, and I did not anticipate that, when ruptured externally, so large a portion of water would have been retained in the womb. Still less did I expect that the organ would have remained atonic; calculating that the stimulation of the manœuvre would have excited that contraction by which the latter part of the delivery should have been accomplished, and in the mean time have arrested the hemorrhage by which she sunk.

Awaiting its action, I continued mild and gentle manipulation, to terminate the labour. I passed a finger over the groin, and brought down the right lower extremity, along with which a loop of cord descended, which I noticed was now pulseless. At length I passed a finger over the right shoulder, and subsequently over the left, sweeping down, in succession, the upper extremities over the facial aspect of the fœtus.

The womb now only contained the head and the placenta, and the fluids of the ovum. I laid my other hand upon the abdominal tumour, and kept it there persistently. At length the ergot acted, inducing a powerful and sudden expulsion of the head, with a copious splash of fluid, believed at the moment to be liquor amnii only, but probably the result of internal hemorrhage added thereto. Recognizing the uterus shrunken in volume, and firm in the resistance offered to the hand, without intermediate relaxation, I proceeded to seek the placenta. I found it wedging up the dilated os uteri, entirely detached, and only awaiting a slight movement to become expelled. Dividing the cord, and laying aside the secundines for further examination, I turned my attention to the patient's general condition. Her pulse was prostrate, head dizzy, ears ringing, and there were threats of syncope.

Syncope presents two very opposite prognoses. If a woman in parturition sheds blood to the amount of one or two pints suddenly, she may probably faint. But syncope renders the current of the circulation more slack; if it does not contribute to, it is not incompatible with, contraction of the bleeding orifices, and it more or less increases the coagulation of their blood. That which impresses the bystander with alarm, assures the accoucheur of his patient's safety. But if losses of blood occurring slowly, but in the end profusely, be followed by syncope, perhaps a condition is arrived at when the circulating organs have met with great and irreparable waste. It is clear that the capital stock of the circulating fluid may be so far exhausted as to render a rally to health a slow and distant process, and, in some instances, to prevent the success of reaction altogether. Under such circumstances syncope becomes exhaustion, which is but one step to death.

From the head symptoms of approaching syncope she recovered considerably, so much so as to make some observations upon other matters than her own condition. Her pulse rose slightly, but again sank progressively.

From fatigue and uneasiness of posture, and the discomfort of her bed, she was anxious to turn, which she did ultimately from her back to her left side, with her face from me towards the wall. She soon moaned and complained of pains from sacrum to pubis, alternating so as to denote after-pains. We gave her ten drops of black drop; she became quiet, and apparently asleep, her breathing full, slow, and expansive, as that of a healthy individual. The noise of respiration soon ceased, and, being unable in the dim light of the room to see any movement of the bedclothes, I laid my hand under them upon her chest, and found that her respiration was at an end. I had given her brandy as freely as she could take it. Her pulse was extinct, and, although seated on the bed close behind her, I was not aware of the exact moment of her departure.

Upon examining the secundines, the membranes had been ruptured close to that edge of the placenta which had crossed the os uteri. The placenta was longer in one diameter than the other. It had been located on the left side of the cervix, and extended in its greatest length from the centre of the os along the longitudinal direction of the womb. The cord was implanted about an inch and a quarter from its lower edge.

For more than two centuries it has been an established practice to evacuate the womb in cases of unavoidable hemorrhage. Accordingly, in a standard work on obstetrics, the *London Practice of Midwifery*, we find the following aphorism: "He that determines to deliver early, has determined that his patient shall not die." This, without certain implied conditions on the one hand, is peremptory, and does not guard the hasty practitioner against delivering too early; and, on the other, instils a confidence of safety which experience will be often found to contradict.

Dr. Lee says: "At the best, it is a dangerous operation, and you can never tell with certainty whether or not the patient will recover after its performance, however easily it may have been effected."

Professor Simpson has been at pains to construct a table of cases in which turning has been resorted to, by various practitioners of eminence, and gives us the statistical average mortality of one in three. Dr. Lee pounces somewhat ferociously upon the table, and proceeds to prove that it cannot be relied on. The cases in it assigned to Ramsbotham, junior, are stated by Simpson at fifty, and the deaths at thirty-three. Ramsbotham says that Simpson has been entirely mistaken, as he gave *thirty-two children* as stillborn; that he finds he had omitted to state the maternal mortality, but, in an after note to Lee, puts this down as fifteen. Now, however this may modify his own proportion of deaths, the whole table of Simpson, if otherwise correct, presents a maternal mortality of three in ten.

Collins delivered by turning in four cases of placenta prævia out of eleven, and two of the women died, one from laceration and the other from hemorrhage. Rejecting the case of laceration, we have a mortality of one in three. For the most part, it is said that in these cases the os uteri is dilated or dilatable very early, and this condition is ascribed to the relaxing effects of the hemorrhage. Now, the rigid condition of the uterine orifice arises from its cohesion of tissue. Normal dilatation results from the physical impress of the ovum upon the lower segment of the womb, determined on it by the parturient throes, from the concurrent contractions of the longitudinal fibres of the organ, and from some interstitial change in the tissue of the cervix and os uteri. Loss of blood may impair muscular contractility, but cannot be supposed much to promote relaxation of physical cohesion. Admitting the fact as stated, it must be explained that the hemorrhage proceeds from disruption of the placental attachment. The disruption from physical expansion induced by the throes, and therefore one of the efficient causes of dilatation, is present; but the implantation of the placenta upon the lower segment of the womb causes undue vascularity, and this may contribute to that interstitial change by which the os uteri is rendered more easily dilatable.

But the hemorrhage is often anticipatory. It may become merged in the commencement of labour. It is known often to induce this prematurely, and, accordingly, we may not only find a serious hemorrhage along with a rigid os uteri, but even with a cervix not yet obliterated, as the term of gestation is not yet complete. This state of the passage will not allow the introduction of the hand with safety. Laceration would almost inevitably ensue. It is not here my intention to enumerate the means to be resorted to in order to stay the hemorrhage while we await with anxiety the dilatability of the os uteri, because in the case (IV.) to which these comments are chiefly directed, I have no idea that I entered my hand a moment too early. 1. I found more resistance and inflicted more pain in insinuating my hand into the vagina than in passing my fingers cone-shaped through the uterine orifice. 2. My attention was persistently bestowed upon the resistance I met with. 3. In bringing down the arms in succession, and in placing a finger in the mouth of the fœtus, to depress the chin upon the sternum, and, after the birth of the fœtus, in dislodging the placenta jammed into the expanded os uteri, I had a full examination of its circle, and could scarcely have overlooked any rent, had such been inflicted. Moreover, there occurred no sudden symptoms annunciatory of serious laceration, although, in ascribing the fatal event to hemorrhage, it is fair to say that the patient had no jactitation or convulsive movements, common in fatal losses of blood, but passed from life to death with all the quiescence of the closing stage of Asiatic cholera. But there are cases on record where the woman has died at once from the first gush of blood at the commencement of labour. Here, it may be conceived, the transition is almost instantaneous from a rigid os uteri to the moribund state. Such cases are confessedly rare. It is more common that a period of delay, avoidable or unavoidable, may allow flooding to such extent, after the dilatation of the os uteri, as may sink the patient to a state of exhaustion. Burns considers such a case to be one of extreme danger. He would reason thus: let her alone, and she must die from hemorrhage; turn, and you inflict such a shock upon her dilapidated condition that she may die while your hand is in the uterus, or soon after delivery. He would give her the latter alternative, with all its risks. Moreau thinks "the fears of writers on the subject of *forced delivery*, in cases of insertion of the placenta over the os uteri, appear to be exaggerated," and gives a case of this kind of his own. He found the woman pale, exhausted, and apparently dying. The operation of version was easily performed. When he drew on the body, after bringing down the feet, the woman had a sort of convulsion, which threw her backward, and he thought she had breathed her last. He hastened to terminate the labour. The mother died, but the child was saved; "whilst, if we had been less *energetic* (?), it likewise would have perished." Dr. Murphy says the time for turning is at the commencement of exhaustion. In my patient this presented itself ultimately, but was not manifested when I began my manipulation. Case IV. contrasts unfavourably with the first two cases sketched. In neither of these had there been any anticipatory waste; in both the os uteri was fully dilated; in both the placenta was centrally implanted; in both the amniotic fluid had been discharged, lessening the bulk of the ovum, and rendering it more solid in its resistance to the surface of the uterus. In the first case the hemorrhage occurred as I approached the bed for examination. In less than five minutes after the flooding was announced, my hand brought down the feet. I passed my hand between the detached placenta and the denuded womb. The fœtus came down reversely in that interspace. Its body became applied to the bleeding surface, whether uterine or placental, forming a perfect internal tampon. The uterus immediately responded by contraction, which gave assurance that no further hemorrhage could occur internally, as that which was external was instantly stayed.

The second case was still more favourable. I was present early after the commencement of the flow. I brought down the feet in the same relation as in the first case, to the disrupted space. Uterine action had not been suspended. These two cases were triumphantly managed, mainly from the favourable circumstances which they evinced.

My fourth patient had anticipatory hemorrhage. There was much flooding at the onset of the labour, which had just placed the os and cervix uteri in a state for the safe introduction of the hand. Although no general exhaustion was manifested, the womb had suspended its throes. For greater facility and less violence, I entered my hand through the unoccupied area of the uterine orifice, and came upon the abdominal aspect of the fœtus, more readily gaining command of the foot. In being turned, the fœtus came down, not interposed in, and compressed upon, the disrupted interspace, but upon its own side of the placenta. I was foiled in attempting to lessen the bulk of the ovum by rupturing the membranes. Now the womb evinced great atony, and failed to respond by contractions to the stimulation of version. This fact made me uneasy. I proceeded, on the one hand, to endeavour to arouse its action by ergot, and, on the other, as speedily as gentle efforts would permit, to advance the delivery. Up to the descent of the body and limbs through the os uteri, the delivery was purely artificial. The ergot at last acted with power, inducing the permanent diminution of volume and firm contraction of the uterine walls; but this event was postponed, through a protracted period of atony, allowing internal hemorrhage to proceed, as was evinced by the fluid discharged with the expulsion of the head of the fœtus, consisting no doubt of lost blood added to the liquor amnii. This waste, in addition to what had previously been sustained, sunk the patient too low for reaction to take place, and over this atonic state the means resorted to had failed.

On the one hand, then, I did not interfere with hasty violence, inflicting a physical lesion on the walls of the uterus, nor, on the other, did I postpone a "determination to deliver early," which determination, "that the patient should not die," was not verified, from causes which I could not control.

In contemplating the danger of the case beforehand, I felt assured that I could not be seduced into any hurried effort to dilate the passage prematurely; I had the fear, however, that I might find the patient ready for the physical manœuvre, but too much exhausted to bear the shock of turning. Had this been her condition, I had made up my mind to practise a minor operation within a few years recommended by Dr. Radford and Professor Simpson, which, although not called for by the circumstances presented on examination, it seems not out of place to speak of here, because, before the delivery was accomplished, a state of exhaustion was really progressive, and was anxiously apprehended, by considering the uncertainty of uterine efforts; suggesting to my mind the minor operation of detaching the placenta, with the reasons why this last was not adopted. My third case was one of delivery without interference, in which nature proved herself competent to rectify the apprehended evils of her own mistake. This woman's pains kept on efficiently, and emptied the womb of its contents.

The organ then was placed in the exact condition it presents after normal parturition. The steps of the process were, successively, detachment of the secundines, their expulsion, and, lastly, the delivery of the fœtus, with permanent shrinking of uterine muscle. Simple and plainly appreciable as were these steps, my own ignorance of what had been observed by others, made me deem this an anomalous case. I find some apology for this want of knowledge in the notice of a case in *Braithwaite's Retrospect*, part ii. p. 203, published by Mr. Gower, of London, as having occurred in the practice of a practitioner of my own name, the details of which are essentially similar. Mr. Gower thereupon remarks: "Perhaps there is no other such case upon record."

But the researches of Prof. Simpson prove that such occurrences are by no means uncommon. Dr. Clark, of the Dublin Lying-in Hospital, had one such case, but the woman died. Collins had another, in which the preceding hemorrhage had ceased when the woman came to the hospital. The fœtus was brought down, in a semiputrid state, by the feet, and no placenta could be found in the womb. It was afterwards ascertained that it had been removed by a midwife the evening before; that is to say, it had probably been entirely detached by nature, and the midwife had nothing to do but take it from the upper part of the vagina. This woman recovered.

Similar cases were well known to Kinder Wood, of Manchester, Eng., more than thirty years ago, and that gentleman had remarked, that as soon as complete separation of the placenta took place, the hemorrhage ceased. In one fortnight, he met with three cases of placenta prævia; turned in all, and all the women perished. He avows, candidly, that under improved information, two of these women could probably have been saved. A fourth case occurring, he says of it: "I durst not deliver, the woman was so low." He imitated nature, entirely detached the placental connections, and the woman was afterwards delivered by her own pains. This, his practice, was well known in Manchester, but, for many years, not beyond it. Dr. Radford, of that city, pursued his example, and, about the same time, the subject suggested a similar practice to Dr. Simpson, of Edinburgh, and these two authors have simultaneously recommended dislodgment of the placenta, to arrest unavoidable hemorrhage in cases where it might be unsafe or impracticable, to turn and deliver. Admitting the propriety of the more serious manipulation of entering the hand into the womb, and performing version in certain cases, Simpson proposes to detach the placenta in such as come under the following heads: Where the os uteri is undilated and undilatable; in premature labours; in all occurring before the seventh month; where the uterus is too contracted; where the passage is too contracted; in most primiparæ; in cases of exhaustion, and where the child is dead. With perhaps too much enthusiasm in his views, he goes on to give the rationale of the benefits of the operation.

The placenta is connected with the uterus by arteries and veins. They form part of the channel of the maternal uterine current of blood. But being nowhere continuous with the circulation of the fœtus, the maternal circle is completed by the interposition, between these arteries and veins, of placental cells, into which the arteries pour their blood, and from which that blood is delivered into the veins in the homeward circulation of the mother. A partial detachment of the placenta breaks open the maternal channels by rupturing both arteries and veins, but not such as correspond with each other. The capillary size, vermicular course, and essential contractility of arterial tissue, causes direct hemorrhage from them soon to cease. Other arteries not disrupted, continue to pour their blood into cells, which, detached from the uterus at their venous connections, effuse the blood so received on the surface of the placenta, and therefore into the cavity of the womb, and thence externally.

Detach the placenta to its extreme edge, and you cut off the arterial supply, and if it be a universal fact that this operation arrests hemorrhage, ergo, in such cases, the flooding is hemorrhage per placentam. But as in cases of post-placental hemorrhage, terminating fatally, the uterus is found flaccid and atonic, its interior surface studded with pits, large enough to receive the tip of the little finger, leading to venous channels spoken of as uterine sinuses, running straightwise, forming free plexuses, without valves, and consisting only of the inner coat of venous tissue, endowed with no contractility, the veins of the womb are entirely dependent upon the contraction and permanent shrinking of uterine tissue, to arrest a retrograde loss of blood from the vena cava itself, and when this loss does occur, it is because of the utter atony of uterine muscle.

If the fact, however, be partially true, that artificial complete separation of the placenta does so arrest a hemorrhage proceeding from its partial detachment, it must be because the operation stimulates the womb, brings on and arouses its contraction, and the shrinking of its tissue, enough to effect the closure of the orifices and channels of the veins of the organ. Sufficient testimony exists that the fact is as stated in many cases, and as this operation can be performed with more ease and far less shock, in cases of exhaustion, it may save many females who would perish notwithstanding turning and delivery.

At the moment of my disappointment by the manifestation of uterine atony when I had performed the version, the idea occurred to me to detach the placenta, in addition to what I had done. But, in the first place, the stimulation of version had not aroused the womb to contraction—it might therefore fail if I detached the placenta. To have entered my hand on the left side of the uterine cavity, it would have been doubtful whether, with such force as I dare exert, I should have been able to effect entire separation. To have increased the partial disruption, according to Simpson's own views, would have increased the hemorrhage. To have succeeded in reaching the far periphery of the placenta, would have inflicted a far more violent shock on the increasing dilapidation of the patient than the more easy version performed in the case.

On the 17th of August, 1855, after the foregoing cases and comments were prepared for publication, I was called in consultation to the following:—

Case V.—Mrs. W., aged 43 years, has calculated the term of her tenth pregnancy to be due on the 1st of October next—her last confinement took place in August, 1853, with a good getting up. In February, 1854, she was attacked with hæmoptysis, which recurred in August and December of that year, and in March, June, and July respectively in the present.

In May last she shed blood from the uterus, again in June, twice in July, and on the night preceding my call. She is pale and feeble, and has been considered much impaired by preceding phthisis. I made no auscultation, as it was important she should avoid the effort to undergo it. The flooding of last night was protracted, accompanied with pain, apparently derived from a distension of the upper part of the vagina by large coagula, which from time to time were expelled. Her medical attendant had made a cautious examination, and found the os uteri undilated, but sufficiently open to allow the introduction of a finger. He recognized the placenta over the orifice, detached on one side, and beyond it a presentation of the head of the fœtus. I repeated the examination, and verified his diagnosis. There was now no discharge of blood. I visited the patient morning and evening to the night of the 21st, inclusive, during which there were occasional anticipatory hemorrhages, ceasing spontaneously. But her dilapidation progressed so that on that visit she seemed likely to sink before midnight, and that probably without delivery.

I was surprised early on the next morning to learn that she was still alive by a message to visit her immediately.

Her accoucheur reported that labour set in about 1 o'clock A. M., accompanied for an hour and a half by free losses of blood, when the flow ceased, to return no more. The labour proceeded with increased force and diminished intervals in the throes, and at half-past five o'clock a still-born premature infant was delivered. I found no flow from the vagina, the cord detached from the placenta, this separated and lying loose in the cervix uteri, while the womb, as felt above the pubes, was shrunken and constricted upon its contents. The secundines were easily removed and without giving any pain, when the uterus assumed the character of firmness and permanent contraction which the experienced obstetrician knows so well how to appreciate in cases of threatened or actual hemorrhage. Her aspect, respiration, and pulse indicated extreme exhaustion, and although brandy was assiduously administered, she sunk in less than an hour after delivery.

On examination, the placenta presented a strip of about 4 inches by 1¾ or 2, upon one of its edges, blackened by coagula, marking the site of its detachment from the uterus, which gave rise to the anticipatory hemorrhages which from time to time had occurred.

There appear to be some points of interest in the above case, which, if they add but little to the mass of information collected on the subject, at least seem to confirm the propriety of the negative course pursued. The patient was considerably advanced in phthisis. Now, whether or not it be true that pregnancy suspends the progress of that disease, although masking its manifestations, labour resulting in premature delivery often occurs, and the patient is unable to establish a good getting up.

Our patient had her dilapidation aggravated by frequent and free anticipatory hemorrhages. In general, these are innocuous, 1st, because the pregnant female bears losses of blood better than she bears repletion; 2d, the loss at each occurrence being moderate, her bloodvessels, by a process of shrinking in calibre, easily accommodate themselves to it; and 3d, because in the intervals the powers of assimilation more or less repair the waste.

Upon the ascertainment of the presentation of the placenta, we had a right to expect unavoidable hemorrhage whenever labour came on. This might induce, and that rapidly, a state of exhaustion, which would forbid the attempt to evacuate the womb by turning, as the shock of the manœuvre might at once prove fatal.

The only alternative then would be, to separate the placenta from its entire connection with the womb, in order to save the woman from flooding to death. If so far successful, the question would afterward come up, whether to leave the uterus to empty itself without aid, or to turn and deliver. At 1 o'clock A. M. (22*d*), labour comes on with much hemorrhage. In an hour and a half this ceases, to return no more. Whatever might have been the influence on the system at large, the flooding did not paralyze the womb itself; but it was still competent to evacuate itself of the fœtus by its own powers. This event superseded the introduction of the hand into its cavity. But in performing its rhythmical efforts to expel the fœtus, it also detached the placenta, so that this was not required to be done artificially.

Now, the woman did not die directly from flooding, but from the shock of spontaneous delivery upon the exhaustion produced by the combined causes of phthisis and previous or anticipatory hemorrhagic waste; and if, in some cases, the accoucheur in his efforts to be prompt to save his patient from flooding to death, is obliged afterward to feel that his very efforts, designed for benefit and put forth with judgment, have added to the danger and fatality of his case, in this instance he can reflect that meddlesomeness had no share in the fatal event.

ART. VIII.—*Bilious Inflammatory Catarrh.* By L. B. ANDERSON, M. D., of Verdon, Hanover Co., Va.

AMONG the difficulties under which a physician labours, in reporting his experience in the treatment of disease, is that of finding a name which will convey a correct idea of either its type or location. This is by no means the case in uncomplicated acute inflammatory affections, but when the inflammation is only of an incubative character, located in several organs, and the functions of other organs are materially impaired, *then* there is an almost insurmountable difficulty. Under the pressure of such an incubus, we proceed to pen the following observations:—

There are two diseases which have prevailed within the sphere of my practice during this and the last winter, contemporaneously with *scarlatina*, which in many respects were not very unlike it. One, for the want of a better name, I presume, is called *miliary fever;* the other, for the same reason, I have thought proper to denominate *bilious inflammatory catarrh.* Both are ushered in with a chill, pain in the back and head, great lassitude, nausea, vomiting, and high fever—occurring in the order here named. With the rise of fever, a copious eruption appears in the first, as florid as scarlatina itself, which disappears with desquamation in 48 or 60 hours, and with its decline the fever subsides. At this time cynanche tonsillaris sets in, and runs the usual course of that affection in ordinary catarrh.

While in the second, there is no eruption on the accession of fever, the tonsils become inflamed, the tongue red and furred, and a dry and harsh cough supervenes. Within twelve hours the fever passes off so completely as to make a *perfect remission,* without any material change in the other symptoms. After the lapse of one or two hours, the fever returns with redoubled violence. The pain in the head becomes excruciating; the eyes are intolerant of the mildest ray of light; the tongue, mucous lining of the mouth, and Schneiderian membrane become red and dry; thirst considerable, but water tastes very unpleasantly; there are incessant nausea and vomiting, first of bile, then of serum, in which are many flocculi of greenish mucus.

This condition is followed in twelve hours by another remission less distinct than the first, and of shorter duration. If no decided impression has been made on the disease up to this time by remedial agents, the third rise of fever knows no abatement, and such is the case until the system has been thoroughly evacuated, and nearly every vestige of local disease is entirely removed.

The difficulties under which a physician labours in the treatment of this disease, arise principally from not being called in until after the second exacerbation of fever, when the stomach is so irritable as to reject almost everything which can be given. Free purgation, with mercurial cathartics, together with acids and demulcents, will generally arrest it, when given during the continuance of the first fever. When this period has passed unimproved, small doses of calomel and ipecac (despite the nausea), spts. of nitre, lemonade, gum-water, &c., internally—flannels wrung out of hot water and spts. turpentine applied over the chest and abdomen, cupping on the temples and neck, chloride of soda (Labaraque's) applied to the throat, and mild injections, constitute the principal remedies in the milder forms, &c.

It is, however, with the object of calling attention to two points in this affection, that I write at present. The one is the perfect remission of fever within twelve hours after the onset—the other, the tendency to inflammation of the brain, when the disease is not arrested before the third day.

So palpably periodical is the fever, as to its exacerbations, that one unacquainted with its history would readily decide to give quinine. Having seen it administered, both in large and small doses, I am prepared to say *that in all quantities it is decidedly injurious.* For while it neither defers nor arrests the paroxysm, it increases the cerebral disturbance invariably, and the only fatal cases I have ever seen were those in which the remissions were most perfect, and quinine had been given. Nor have I seen blisters otherwise than injurious at any time, while general bloodletting is hardly borne, and often is decidedly injurious. And while mild purges are highly beneficial, drastic cathartics invariably produce dysenteric symptoms. The affection of the head in the early stages seems to be the result of the impression of morbific agents in the prima viæ, and consequently almost entirely sympathetic. This may be inferred from the fact that, so soon as the bowels are freely evacuated, and the secretions restored, the fever as well as the cephalalgia abate. And it is only in those cases when such indications have not been properly met prior to the third day, that cerebritis supervenes.

In many cases of this character I have seen, the pulse is slow, feeble, and intermittent, the hands and feet are cold, the bowels relaxed, and the stomach easily nauseated, &c. &c. What will cure such an affection I know not, for I believe I have tried everything which seemed to be at all indicated, and uniformly without benefit. Happily, I have seen only two such cases, and hope that neither I nor any one else may see another.

No disease is more manageable than this, when efficiently treated in its early stages. If, however, one becomes impressed by its periodical character, with the idea that everything else in the line of remedial agents must be made to succumb to the use of quinine, the delay thus occasioned will be hazardous, if not fatal. Calomel freely administered from the first until all vitiated matters are removed from the bowels, and the secretions are restored, is more effectual than all things else besides.

ART. IX.—*On the Connection between Puerperal Peritonitis and Erysipelas.* By A. P. DUTCHER, M. D., Enon Valley, Lawrence Co., Pa.

THE connection between erysipelas and puerperal fever has recently given rise to a good deal of discussion. That such relationship sometimes exists, I believe can be proved. I shall relate a few circumstances which have fallen under my notice, which in my opinion fully establish this.

In the year 1850, Dr. W., of N. B., was called to see Mrs. A., aged about 60, who had been scratched on the back of the hand by a pet cat. The hand had become very much swollen, quite red and painful, and she had headache, pain in the back, nausea, and fever. The Dr. prescribed what he supposed the case required. On his next visit he found the symptoms all aggravated. The swelling had now extended up the entire arm, and had assumed a decided erysipelatous character. In the course of a few days, suppuration ensued on the back of the hand and fingers. There were also several small ulcers on the forearm. The Dr. dressed these daily. One day, while thus engaged, he was called in haste to attend Mrs. McC. in confinement. Three days after labour she was seized with puerperal fever, of which she died on the sixth day after confinement. In the course of four weeks, he attended seven cases of labour; the mother in every case died with the same disease, and the infants perished with general cutaneous erysipelas.

After attending the last of these unfortunate cases, the Dr. himself was taken with erysipelas in his right hand, commencing in the little finger, and extending over the entire arm, and down the right side to the subaxillary region, where a large abscess formed, which discharged for some days, and finally healed. After much suffering, the Dr. regained his usual health. Who can doubt, for a moment, but all this suffering and death proceeded from the hand of Mrs. A.?

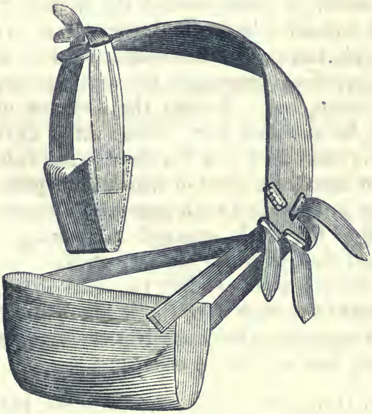
About four years since, Dr. C., of P., was called upon to bleed Mrs. G. In two days after, on removing the bandage from the arm, a circumscribed redness of about an inch in diameter presented itself, around the wound in the vein. By the next morning it had extended over the entire arm. It was very much swollen and quite painful, having all the characteristics of erysipelas. Notwithstanding the most judicious treatment, the arm became gangrenous, and the patient died in consequence. During the sickness of this lady, Dr. C.'s wife had an abortion, he attended her. Some three days after confinement she took puerperal fever, and died in a few days. He subsequently attended some thirteen cases of labour, in most of which fatal puerperal fever supervened; and many of the infants died with general cutaneous erysipelas. A lady, by the name of Mrs. H., while engaged in making a shroud for one of the individuals who had died with the disease, pricked her finger with a needle; after some five or six hours she washed the babe of this individual, who had also died. In six days the wound in the finger became puerperal, swollen, and red, and in a few days the whole arm was involved in erysipelatous inflammation, and she nearly lost her life in consequence.

I think we may reasonably infer from these circumstances, that there is a very intimate connection between erysipelas and puerperal fever; that they are both propagated by contagion, and that the two are capable of reciprocally producing each other. We also know that sometimes the two diseases prevail, as concomitant epidemics, beginning at the same time, or nearly so, keeping pace with each other, and terminating simultaneously. Dr. Gordon, of Aberdeen, long since observed these facts. And what practical lesson shall we draw from them? Whenever a physician is attending upon a case of erysipelas or puerperal fever, in the language of Dr. Watson, "he should use the most diligent ablutions; he should even wash his hands with some disinfecting fluid—a weak solution of chlorine; he should avoid going in the same dress to any other of his midwifery patients; in short, he should take all those precautions which, when the danger is understood, common sense will suggest, against his clothes or his body becoming a vehicle of contagion and death between him and his patients. * * * * *Should these precautions all prove insufficient, the practitioner is bound, in honour and conscience, to abandon, for a season, his vocation.*"

ART. X.—*Apparatus for the Treatment of Fractures of the Clavicle.* By RICHARD J. LEVIS, M. D., of Philadelphia. (With three wood-cuts.)

THE indications of treatment of fracture of the clavicle require an apparatus which will restore the outer fragment to the original line of continuity of the bone, by restoring to the shoulder that support which the sound bone had given to it. The direction of that support is in the natural line of the clavicle, upward, backward, and outward.

Fig. 1.



If the shoulder, and with it the outer fragment, be thus supported, the tendency to displacement, with the exception of the slighter lateral displacing causes, will be overcome. An apparatus fulfilling these indications should also be capable of steadily retaining its position without disposition to slip or yield; comfortable during a protracted confinement of the shoulder and limb; applicable to varied circumstances of fracture, and simple in its construction.

In the accompanying cuts is shown an apparatus so arranged as to answer these requirements, and which the writer, after several instances of its application, believes to be more effectual and convenient than any which he has heretofore used.

It consists of a short, firm pad in the axilla, by which the shoulder is held from the side, and over which, as a fulcrum, the elbow is drawn to the side. To the front and back of the axillary pad are fastened straps, which pass directly upwards, and are buckled to a wide main supporting band, which passes from the shoulder across the upper part of the back, and over the shoulder of the sound side, and terminates on the front of the chest.

By this means the shoulder is supported, and the pad immovably held high in the axilla, where its pressure can be more conveniently borne than when its widest part compresses the brachial nerves and vessels lower down; besides, a better leverage is thus given to the arm over the pad.

Fig. 2.

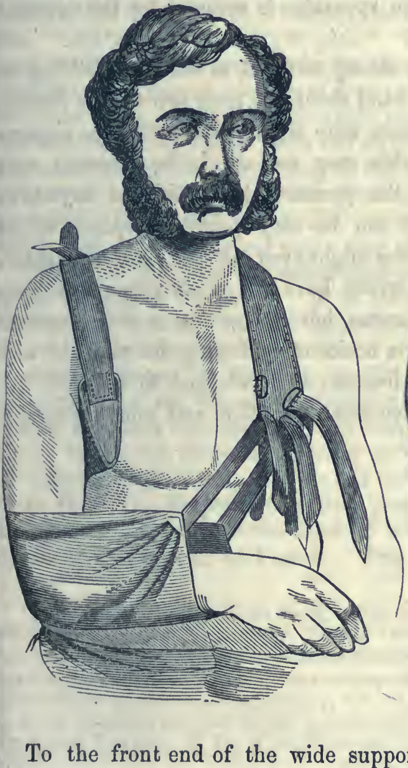
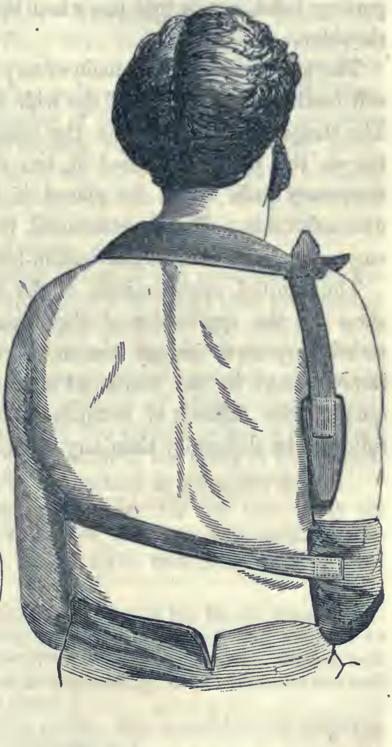


Fig. 3.



To the front end of the wide supporting band is suspended a sling, by which the elbow is supported. On the back of the sling, at a short distance above the point of the elbow, a strap is attached, which passes obliquely across the back, and, coming in front, is buckled to the main supporting band. The action of this strap is to draw the elbow to the side, at the same time supporting it, and its opposite attachment in front prevents the tendency of the wide band to ride upward and press uncomfortably on the superficial vessels of the neck.

By this combination, united so as to form one continuous piece, requiring no extra bandage over it, the shoulder is firmly held in the proper direction without any risk of yielding or slipping of the apparatus, and so secure that the most restless patient cannot disarrange it.

In adjusting the apparatus, the arm is passed through the opening above the pad, the wide band thrown across the opposite shoulder, the elbow placed in the sling, and the long strap attached to the back of the sling brought round in front.

In removing it from the patient, it is only requisite to loosen the long back strap which draws in the elbow, by unbuckling it at its front attachment. The other straps need never be removed from the buckles.

The extra buckle, which will be noticed at the front end of the wide supporting band, comes into use when the apparatus is reversed for the opposite shoulder.

The apparatus may be made of any strong material, as webbing, drilling, or soft leather. The width of the wide band should be from two to four inches. The straps which press upon the surface were slightly padded in the apparatus as the writer has used it, but this may not always be essential, and temporary pads might be placed if the pressure should become anywhere uncomfortable. Thus constructed, it can be very speedily prepared at an emergency, and buttons and button-holes might even take the place of buckles.

The limited opportunities of the writer have not given very many occasions for the application of the apparatus, but its use was in those cases so satisfactory as to induce him to offer a notice of it, feeling the value of any improvement in the treatment of a fracture acknowledged to be more frequent, more difficult of retaining a correct apposition, and more generally followed by deformity than any other.

ART. XI.—*Croup: its History, Nature, and Treatment.* By ALBERT NEWMAN, M. D. The Dissertation to which the Fiske Fund Prize was awarded, June, 1855.[1] (Published by request of the Rhode Island Medical Society.)

THE disease usually designated by the term *croup* is confined almost entirely to infancy and childhood, though a considerable number of cases have been recorded as occurring in adults, and presenting all the essential symptoms of the disease, including the formation of false membrane in the air-passages. By reference to the eleventh report to the Legislature of Massachusetts, relating to the registry of births, marriages, and deaths in that State, for the year ending December 31, 1852, we find that 429 deaths occurred from croup, during the year, in that State. Of these, 71 were between the ages of five and ten, and one upwards of twenty years old. The remaining 357 were under five. 243 were boys, and 178 girls.[2] They were scattered very regularly all over the State, 316 occurring in the nine eastern, and 113 in the five western counties. The annual average of four years, ending December 31, 1852, from the same cause, was 367. The whole number of deaths from croup, occurring in the State during eleven years and eight months, ending December 31, 1852, amounted to 3,000. According to the same report, which probably contains as reliable information upon this point as any statistics yet published, we find that of 6,914 children which died under five years of age, during the year 1852, 351, or over five per cent., died of croup.

From such statistics it appears that croup is one of the most fatal and frequent diseases of childhood. It is hardly possible to doubt that this disease has existed from the earliest ages, though confounded by the ancients with other diseases affecting the throat and air-passages.[3] It was first described as a distinct disease by Dr. Blair, in 1718; yet extremely accurate and vivid descriptions of the disease are found in the writings of Hippocrates, Celsus, Galen, and their successors, though masked by the absurd pathology of their time. It was not, however, till after the publication of the essay of Dr. Home, of Edinburgh, in 1765, that it came to be recognized as a specific disease.

In 1807, the Emperor Napoleon proposed a prize for the best essay on croup, in consequence of the death of his nephew, his then contemplated successor to the throne of France. This called forth numerous productions.

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[1] The Trustees of the Fiske Fund, at the annual meeting of the Rhode Island Medical Society, held at Providence, June 6, 1855, announced that they had awarded to the author of the dissertation bearing the motto: "*Corn from the sheaves of Science, with stubble from mine own garner,*" the premium of fifty dollars, by them offered for the best dissertation on the following subject, viz: "*Croup.*"

Upon breaking the seal of the accompanying packet, they ascertained its author to be Albert Newman, M. D., of Attleborough, Massachusetts.

ARIEL BALLOU, M. D., Woonsocket,
HIRAM CLEVELAND, M. D., N. Providence,
ISAAC RAY, M. D., Providence,
Trustees.

S. AUG. ARNOLD, M. D., Providence,
Secretary of the Fiske Fund Trustees.

[2] The sex of 8 was not reported.

[3] See American Journal of the Medical Sciences, vol. iii. pp. 56–87.

Previous to this many valuable essays had appeared from our own countrymen, Drs. Rush, Bard, Chalmers, and others. In 1811, Dr. David Hosack published a valuable essay on this disease, containing substantially the pathology of the affection which has been generally adopted to the present time.[1] Dr. H. maintains the inflammatory character of the disease, and says that in eighteen years' practice he had never met with a case uncomplicated with symptoms of local inflammation.

We believe croup to be always an inflammation of the mucous membrane of the larynx, extending generally to the trachea also, and not infrequently more or less deeply into the bronchial tubes. Associated with the inflammation there is always spasm of the laryngeal muscles. Spasm of these muscles may exist independent of inflammation or of vascular irritation, constituting a distinct disease, essentially different in its nature and pathology from croup, with which it should not be confounded. It is an affection of the spinal nervous system, and is caused by irritation in some part of the system, often by dentition or disordered bowels. This affection we shall designate by the term *laryngismus;* merely saying, in explanation, that we mean thereby a spasmodic condition of the muscles of the larynx analogous to that which occurs in croup, but, unlike that, depending not upon inflammation of the mucous membrane of the larynx, but upon an irritation in some other part of the system.

Symptoms and Course.—The disease is frequently preceded for two or three days by a catarrh. The patient is affected with cough, hoarseness, sneezing, suffusion of the eyes, &c. After the continuance of the catarrh for two or three days, and often without any such precursory signs, febrile symptoms make their appearance. The patient, if old enough to describe his feelings, complains of chilliness, alternating with heat, headache, and occasionally of pain in the back and limbs. The pulse becomes frequent and hard, the skin hot, the face slightly flushed, the eyes red and watery, and the tongue white and loaded at its base. These symptoms are not infrequently so slight, especially in young children, as to escape detection altogether; and, when observed, generally precede for a few hours only the appearance of the symptoms about to be noticed. This is the *precursory stage*—the *stage of invasion* of Guersent. After the continuance of the above symptoms for a longer or shorter time, or, it may be, without any such symptoms having been observed, the fully-developed state of the disease is ushered in. In the majority of instances this occurs in the early part of the evening and during sleep. The patient starts out of sleep with a peculiar, dry, ringing cough, which it is scarcely possible to describe, but which cannot fail to be recognized after having been once heard. The cough is frequent, and immediately succeeded by a dry, hissing, sonorous inspiration. Expiration is performed quicker than natural, whilst inspiration is much prolonged. The voice is rough and hoarse. There is dyspnœa, often severe, exciting strong voluntary efforts in aid of respiration. The head is thrown back, the respiratory muscles act with great force, and the whole aspect of the patient is that of one labouring for breath. Sometimes the patient complains of pain, with a sensation of constriction, about the larynx, which is occasionally slightly swollen externally. There is scanty expectoration, often slightly tinged with blood. The fauces, if examined, will generally be found red, and sometimes covered with patches of false membrane. Sometimes, however, no abnormal appearances are to be seen. A more or less complete remission of these symptoms usually occurs in the morning. The pulse, however, remains frequent, the cough loses nothing of its peculiar character, and inspiration, though less laboured, still remains stridulous. The remission may continue through the day; but, if the patient falls asleep, he is apt to awake with an aggravation of all the symptoms. Occasionally there is no return of the dyspnœa, the cough and hoarseness soon subside, and health is again established. And this result sometimes occurs without treatment. Usually, however, on the return of evening, if not before, the symptoms become aggravated. The cough is more difficult, the stridor of inspiration louder, and the patient's anxiety and want of breath much increased. The voice becomes broken and occasionally quite suppressed. The imperfect aeration of the blood begins now to be manifested by slight lividity of the lips and cheeks, especially during coughing. Sometimes the cheeks are extremely pale and tumid. As the disease advances, the extremities become cool, and the pulse very frequent, feeble, and irregular. There is drowsiness and stupor, and occasionally delirium. The bowels are constipated, and the urine in small quantity and high coloured throughout the course of the disease. If the disease is not arrested either by treatment or the efforts of nature, the remissions become less and less marked, and all the urgent symptoms increased. The pulse and respiration are much increased in frequency and diminished in force. The head is constantly thrown back, and all the respiratory muscles act forcibly. Death may occur suddenly during an exacerbation of the laryngismus, or it may occur as the result of a slower suffocation, preceded by an increase of all the signs of impeded respiration before mentioned, with a cold skin, clammy sweats, a feeble, irregular, or intermittent pulse, and, finally, coma. Vomiting is usually followed by momentary relief, especially in the earlier stages of the disease. Occasionally patches, and sometimes perfect tubes, of false membrane are ejected. When this occurs, it is generally followed by temporary relief; often, however, the symptoms return with all their former violence, and death succeeds. If the patient is old enough to expectorate, the matter coughed up at first is glairy, viscid, and fibrinous, but becomes purulent as the disease proceeds. In any stage of the disease, a favourable termination is indicated by a diminution of the frequency of the pulse, the difficulty of respiration, hoarseness, and of the frequency and peculiarity of the cough.

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[1] Am. Med. and Phil. Register, vol. ii. p. 40.

The severity of the symptoms varies much in different cases. Sometimes they are of sufficient intensity to destroy life in a few hours; and, again, the sports of the little patient, during the day, are scarcely abridged. And between these extremes there is every degree of variation and danger. No case, however, ought for a moment to be considered free from danger. In the mildest cases, sudden and dangerous aggravations are not uncommon. If there is any increase of the frequency of the pulse and heat of the skin, with stridulous inspiration and a "croupal" cough, judicious treatment should be at once instituted, and steadily persevered with so long as they continue. Not infrequently the inflammation extends to the bronchial tubes, and the symptoms of bronchitis become superadded to those of croup. The duration of the disease varies from one or two days to as many weeks. The greatest proportion of deaths is said to occur at about the fourth day.

Varieties and Modifications.—Several writers recognize and describe two varieties of croup, viz: *catarrhal croup* and *membranous croup.* The essential difference between these two varieties is claimed to be the constant presence of false membrane in the latter, and its constant absence in the former. Guersent, Bretonneau, and Bouchut consider no cases true croup in which false membrane is not formed.[1] We do not think that the presence of false membrane has any claim to be considered either the pathognomonic symptom of the disease, or the characteristic of a distinct variety. Nor can we see any practical benefit to be derived from such distinction; the nature and pathology of the disease being, as we shall endeavour hereafter to show, essentially the same in cases in which false membrane is formed, as in those in which it is not. It is, we believe, admitted on all sides that it is impossible to determine, in the forming stage of any case, whether it will assume the membranous form or not. "The symptoms," says Wood, "are sometimes at first exactly those of the catarrhal croup, and the difference is not detected until the voice begins to become whispering, and the cough to exchange its peculiar ringing or sonorous character for a husky sound. . . . Indeed, in the earliest stages, *before secretion has commenced*, it would be impossible to determine with certainty which form the disease was about to assume."[2] This distinction, therefore, if insisted upon, cannot be recognized till after exudation has occurred; nor even then, with any degree of certainty, in the majority of cases. The only certain diagnostic symptom of membranous croup is the expectoration of patches or tubes of false membrane. (*Wood.*) And this is said to occur in scarcely one-third of the cases. (*Rilliet and Barthez.*) While, therefore, we doubt the utility or propriety of considering cases in which false membrane is formed as a distinct variety of croup, we would urge the importance of not overlooking the fact of the possibility of its occurrence in any particular case, since such a result, especially if extending into the bronchial tubes, must necessarily increase the danger of the patient. The distinction most important to be borne in mind is that which relates to the type of the disease. Like all other inflammations, croup may be *sthenic* or *asthenic*, a distinction which ought never to be lost sight of, being not less important in a therapeutical than in a pathological point of view. The disease must also be more or less modified by the greater or less extension of the inflammation into the bronchial tubes, and by association or complications with other diseases. Not infrequently a bronchitis remains after the symptoms of croup have subsided, and this may even prove fatal at last.

It is now well known that inflammation of the laryngo-tracheal mucous membrane in adults, is sometimes accompanied by the formation of false membrane. The circumstances under which this result is most likely to occur will be alluded to further on.

M. Bretonneau describes under the name of *diphthérite*, or croup of adults, what he considers a specific form of inflammation of the mucous membrane of the throat and air-passages. It is generally attended with a low, typhoid, or adynamic state of system, and frequently proves fatal. It is generally an asthenic form of the disease, occurring chiefly in individuals already enfeebled and debilitated by previous diseases or epidemic influences. The false membrane in these cases almost always covers the tonsils and pharynx, descending from thence into the larynx and trachea. It is darker coloured and less firm than in sthenic croup.

Laryngismus alone, unassociated with inflammation of the mucous membrane of the larynx, has no pathological relation to croup, and therefore no claim to be considered a variety of that disease.

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[1] "La présence de cette fausse membrane est la caractère anatomique fondamental de cette affection. Sans ce produit nouveau, il n'y a pas de croup."—*Manuel Pratique des Maladies des Nouveaux-Nés, etc.* Par M. Bouchut.

[2] A Treatise on the Practice of Medicine. By George B. Wood. Art. "Croup."

Complications.—Perhaps the most dangerous complication of croup is with *cynanche maligna* either in its simple form, or in its association with scarlatina. This complication is not uncommon during epidemic visitations of that disease. The inflammation in such cases extends from the fauces to the pharynx and air-passages; and the false membrane, which is usually soft and of a dark or ash colour, often covers the tonsils and whole surface of the fauces and pharynx, extending more or less into the larynx and trachea also. It is generally attended with an adynamic state of system, and frequently with great fetor of the breath.

Croup is also not infrequently complicated with *cynanche tonsillaris* and the various forms of *angina.* In all these cases the affection of the air-passages is consecutive, the particular disease of the tonsils or throat preceding the characteristic symptoms of croup. Occasionally, croup is so frequently complicated with an epidemic of some one of these affections as to give it the form of an epidemic also.

The disease which has been described by Louis and others as croup in the adult was complicated with an affection of the tonsils and fauces.

Complication with *measles* is not uncommon. It may occur at any period of the disease from the commencement to advanced convalescence. It is sometimes mild and manageable, though occasionally severe and dangerous. We have seen it prove speedily fatal during the eruptive stage of the disease.

Complication with *smallpox* is said to be not uncommon. According to Copland, "it usually occurs in the more severe cases, particularly when the disease is confluent, and generally comes on slowly in the suppurative stage. In the more malignant cases, the difficulty of respiration is excessive; the voice very hoarse or suppressed; the paroxysms of suffocation are extreme; the cough dry or giving issue merely to a small quantity of dirty serum, or muco-sanguineous or dark sanguineous matter; and the attendant fever adynamic."

The complication of croup with *bronchitis* has already been alluded to (p. 104). When this complication exists, the bronchitis is consecutive, and the consequence of the extension downwards of the laryngo-tracheal inflammation. The inflammation may, perhaps, extend thus to the substance of the lungs and *pneumonia* supervene. Bronchitis or pneumonia thus supervening is not infrequently the cause of a fatal termination.

Anatomical Characters.—The mucous membrane is found red and tumefied, either continuously or in patches, over a greater or less extent of surface. The bloodvessels are injected, and there is often slight softening. Sometimes these appearances are confined chiefly to the larynx and upper part of the trachea, and, at other times, they extend over nearly the whole surface of the larynx, trachea, and bronchial tubes. The patches of redness sometimes occur in the form of rings passing round the trachea; sometimes extending lengthwise or irregularly. After the occurrence of the exudation, the inflammatory appearances of the mucous membrane are much less distinct; though they still remain in patches or streaks at least. Early in the disease the exudation upon the surface of the mucous membrane is scanty, viscid, and sometimes tinged with blood. Later, it is much more abundant and generally purulent. Patches and ribbons of false membrane are also generally found confined sometimes to the glottis, and sometimes lining more or less continuously the whole tract of the air-passages. It is said sometimes to have formed from the fauces to the last ramifications of the bronchi without any breach of continuity (*Bretonneau* and *Bricheteau*). Perfect tubes are sometimes formed within the bronchi, the appearance of which has been compared by Dr. Cheyne to that of macaroni boiled in milk. And the exudation is sometimes so copious in the smaller bronchial tubes that they become filled with a solid cylinder of plasma. (*Peaslee.*) The consistence of the false membrane varies much in different cases, and also in the same case. In some cases it is quite firm, and in others so soft that it cannot be removed with forceps. It is generally firm in sthenic cases, and soft when it occurs in the asthenic; it is generally firmest also in the upper part of the trachea, and softest where it terminates below. Its colour is whitish or yellowish white; and its attached surface is often dotted over with numerous small specks of blood. Its thickness is differently estimated by different observers, but probably seldom exceeds a line and a half. It is thickest upon the posterior and superior wall of the trachea. It is believed that two or more membranes have sometimes formed successively on the same surface. The false membrane sometimes adheres with considerable firmness; but more frequently it is partially detached, and has beneath it more or less muco-purulent matter. Upon the removal of the false membrane, the mucous membrane beneath it is seldom found to exhibit signs of severe inflammation; and not infrequently has nearly a healthy appearance, even when covered with a thick, concrete membrane. Upon this point, Dr. Ryland observes: "It happens but very rarely that we have an opportunity of examining the state of the membrane in the first period of croup, before the formation of the albuminous concretion; and it is on this account, in a great measure, that we seldom find any vivid injection of the parts, for the secretion of the lymph weakens the inflammation most commonly, and in the end puts a stop to it entirely."[1] In many cases, however, no false membrane is found. In such cases, the mucous membrane is generally found covered with a considerable quantity of puriform matter. In some cases, terminating fatally in a few hours, it seems as though death had occurred before sufficient time had elapsed for the exudation to become converted into a false membrane.

Nature and Pathology.—Croup has been considered by most writers as essentially different from inflammation of the same parts occurring in the adult; and, from its more frequent tendency to the formation of false membrane, has been supposed to possess a specific nature. Our own views upon this, and some other important practical points in relation to the nature and pathology of this disease are comprised in the following propositions, which we shall endeavour to substantiate as we proceed:—

1. Croup is always an inflammation of the mucous membrane of the larynx and trachea.
2. The inflammation may be sthenic or asthenic.
3. The inflammation is invariably accompanied by an exudation of the plasma of the blood from the vessels of the part, and upon the surface of the membrane; which exudation becomes organized into a false membrane in about one-sixth of all the cases.
4. This exudation is not essentially different from that which occurs upon the same membrane when in a state of inflammation in the adult; nor from that which occurs upon other inflamed mucous or serous membranes.
5. The exudation relieves more or less completely the inflammation which has produced it.

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[1] Diseases and Injuries of the Larynx and Trachea. By F. Ryland, p. 134.

6. The false membrane, when formed, never becomes vascular; and therefore soon loses its slight vitality, becomes detached and spontaneously falls off.
7. The inflammation commences generally in the fauces—sometimes in the larynx; but, at whatever point it may commence, it extends *always downwards, never upwards.*
8. The inflammation is uniformly attended with more or less laryngismus; and this, in the majority of cases, first shows itself during sleep.
9. The presence of the false membrane does not constitute the sole or chief danger in croup.

1. That croup is an inflammation of the lining membrane of the larynx and trachea is too generally admitted to make it necessary for us to dwell upon it. Those writers, even, who insist most strongly upon the pathological difference between cases in which false membrane is formed, and cases in which it is not, consider both classes of cases inflammatory; the difference insisted upon being a peculiar element in the inflammation in the former, which causes a plastic exudation. Dr. Ware gives to the former the name of *membranous*, and to the latter the name of *inflammatory* croup. Dr. Wood calls the former *pseudo-membranous*, and the latter *catarrhal;* saying, in explanation, that in giving it the name of *catarrhal croup*, he wishes to be understood merely as indicating that the inflammation is of the same general nature as that which occurs in catarrh. But the increased secretion from a mucous membrane constituting catarrh is not the result of inflammation at all, but of simple congestion, or irritation, or both. If this congestion or irritation passes into inflammation, the catarrhal secretion is at once arrested, and plasma is exuded upon the surface of the membrane (*Hasse*). Whether this exudation becomes converted into a false membrane or not will depend upon other circumstances which will be considered hereafter. That by *catarrhal inflammation* Dr. Wood means not simply the congestion and irritation of catarrh, but actual inflammation, is clearly shown by the following extract from his description of catarrhal croup: "Dissection exhibits redness of the mucous membrane of the larynx, trachea, and bronchia, either in patches or continuous, with occasional swelling of the submucous tissue from inflammatory infiltration, and more or less mucus in the air-passages, which, if death has taken place early, is scanty, viscid, and adherent to the sides of the tubes; if in the more advanced stages, is more abundant and often purulent. Occasionally, patches of adhering false membrane may be detected, but insufficient to have had any agency in the fatal result." The inflammation may be confined to the larynx and trachea; but it sometimes extends over the whole surface of the air-passages; and the extent of membrane affected may be of any degree between these two extremes.

2. The inflammation may be either sthenic or asthenic. The importance of this distinction has been already noticed. The character of this, as of other inflammations, is dependent chiefly upon the condition of the patient and upon epidemic influences. As a general rule, in robust and plethoric children the disease assumes a *sthenic*, and in the feeble and debilitated, an *asthenic* type; while between these two there may be many intermediate grades. The effects of epidemic influences upon the character of this, in common with other diseases, are important, and should be constantly borne in mind.

3. That the inflammation of croup is uniformly accompanied by an exudation of the plasma of the blood is admitted on all sides in respect of all cases in which a false membrane is formed. The fact that most writers recognize

two varieties of croup, one characterized by the presence of false membrane, and the other by its absence, and both presenting the most positive evidences of inflammation of the mucous membrane of the larynx and trachea, shows conclusively that inflammation of that membrane does occur in the child without the formation of a false membrane. Indeed, such a result is found to occur in only a small proportion of all the cases. And it is well established that inflammation of the same membrane in the adult is sometimes—though much more rarely—followed by the formation of a false membrane also.

It becomes, then, an important point in the pathology of this disease, to determine whether the false membrane, in cases in which it occurs, is due to a peculiar and distinctive form of inflammation, characterized by a peculiar and plastic exudation; or, whether it is altogether the result of accident, or a combination of fortuitous circumstances, the same exudation, essentially, occurring in all the cases. The former of these opinions has been generally maintained; but the latter we consider most consonant, both with facts and analogies. If we examine the facts in the case, we find, 1st. That many cases not at all distinguishable for any practical purpose from membranous croup, and which are diagnosticated and treated as such, run their whole course, either to recovery or a fatal termination, without presenting any positive evidence of the presence of a false membrane at any period of their course. We attended a case of croup a short time since, during almost the whole course of which there was complete loss of voice. Convalescence commenced during the third week, but the child was not able to speak above a whisper till some time later, and a considerable degree of hoarseness remained for several weeks. There was no appearance of false membrane either in the expectoration or matters vomited during the course of this case. Moreover, post-mortem examinations of fatal cases sometimes fail to reveal the presence of a false membrane in the air-passages. It is, therefore, at least probable that, in some cases not distinguishable from membranous croup during life, no false membrane at all is formed. On the other hand, it is well known that cases not considered membranous, when terminating fatally, present not unfrequently, upon examination, more or less extensive patches of false membrane. Dr. Wood says, in describing the anatomical characters of "catarrhal croup," that "occasionally patches of adhering false membrane may be detected, but," he adds, "insufficient to have had any agency in the fatal result." And M. Guersent found, on dissection, in the larynges of young children who had died of what had been considered "spasmodic croup," "albuminous concretions, sometimes extensive, but more frequently consisting of small isolated patches."[1]

2d. Where expectoration occurs, it is essentially the same in both classes of cases; being, in the earlier stages of both, stringy, glairy, and adhesive, and not unfrequently tinged with blood; and becoming generally, except perhaps in cases of very slight duration and severity, purulent as the disease proceeds. In relation to the post-mortem appearances of cases in which no false membrane is found, Copland says: "In the very few opportunities I have had of examining the state of parts in the more purely spasmodic cases of croup, an adhesive, glairy fluid, with patches of vascularity, were observed in the epiglottis and larynx."[2] There can be little doubt, we think, that this "adhesive, glairy fluid," is present upon the inflamed membrane in all cases of croup; and that it is the same plastic exudation as that which in some cases becomes concreted into a false membrane. The purulent matter which is found upon the mucous membrane in the later stages of all cases, is the result of a degeneration of the exudation corpuscles of the exuded plasma. Not only are these conclusions necessary to a satisfactory explanation of the preceding facts, but they derive confirmation also from their analogy with what is known to occur in other diseases. Perhaps no fact in pathology is better established than that inflammation of serous membranes is uniformly attended by an exudation of the plasma of the blood from the vessels of the part, and upon the surface of the membrane. In acute inflammation of a serous membrane, this exudation takes place in a few hours (*Williams*). The exuded plasma in these cases may become organized into a permanent false membrane; but this result is by no means constant; it occurs only in a minority of all the cases (*Peaslee*). So far, then, we see a very exact analogy between the inflammation of serous membranes, whether occurring in the infant or adult, and the inflammation of croup. Both are attended uniformly by an exudation of the plasma of the blood; but in neither does the exuded plasma become uniformly organized into a false membrane. If the exudation becomes oftener and more perfectly organized in inflammations of serous membranes than in croup, many reasons occur to us why it should be so. In the case of inflammation of a serous membrane, the exudation is in close contact with the living membrane on both sides, being separated only by a delicate layer of scaly epithelium; it is completely protected from the influence of air and other foreign bodies; and it is maintained in a state of comparative rest for a considerable length of time. All these circumstances are most favourable to the result of organization. In croup, on the contrary, one side only of the exudation can be in contact with the living membrane, the other being exposed to the constant action of the air in breathing. Moreover, the mucous membrane of the air-passages is covered with a conoidal instead of a delicate scaly epithelium, and the necessary contact of the plasma with the living membrane is constantly liable to interruption from cough and other motions of the parts. If, then, under a combination of circumstances so favourable to such a result, inflammation of serous membranes produces false membranes in only a minority of all the cases, we certainly need not wonder that the inflammation of croup should produce them in a still smaller proportion; though plasma be exuded in every case. Nor need we be surprised, on the other hand, that in a small proportion of the cases such a result should occur.

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[1] See Copland's Dictionary of Practical Medicine. Article "Croup."

[2] Copland's Dictionary of Practical Medicine. Art. "Croup."

Dr. Horace Green,[1] after having maintained that all the so-called varieties of croup are pathologically and practically one and the same disease, and that the essential elements of the disease are inflammation of the mucous membrane of the air-passages and its accompanying plastic exudation, endeavours to prove that the plastic material "is secreted by the muciparous glands which so abundantly stud the larynx and trachea." The chief arguments in support of this theory, are, that the false membrane is uniformly thickest and most perfectly formed wherever these glands are most numerous; and that, as observed by Hasse, "filamentous bands are sometimes found between the plastic exudation and the mucous membrane, consisting merely of delicate fibrous threads, which dip into the orifices of the muciparous glands." That the exudation should be most abundant, and therefore the resulting membrane thickest where these glands are most numerous, is satisfactorily explained by the fact, that these follicles being merely an inversion of the mucous membrane, there is a much greater amount of free surface, and a much greater number of bloodvessels inclosed in the same space than elsewhere. This also readily explains the fact observed by Hasse. Moreover, we do not think that any established physiological or pathological phenomena can justify us in supposing that either mucous follicles or any other secreting organs have ever, under any circumstances, the power of separating organizable fibrin from the blood.

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[1] Observations on the Pathology of Croup, etc., pp. 14–16.

The proportion of all the cases of croup in which a false membrane is formed is about one-sixth. Of 131 cases observed by Dr. Ware, 22 were cases of membranous croup. Still it is impossible in the commencement of any case to tell whether such a result will follow or not. We may be certain at the commencement in every case, that plasma will be exuded upon the surface of the membrane. In adults, the plasma thus exuded is usually at once removed by coughing; but in infants and young children, this is not so. If the inflammation occur in a plethoric child, whose blood is rich in fibrin, and there is little cough, the danger of the formation of a false membrane becomes increased. The exudation of the inflammation of a serous membrane may be entirely absorbed; but this is probably seldom, if ever, the case with the exudation of an inflamed mucous membrane. But instead of becoming formed into a false membrane, it may, by a degeneration of its exudation corpuscles, become converted into pus, and thus removed. And this result actually occurs in a majority of the cases. The amount of the exudation, and hence the thickness of the resulting membrane is influenced by the degree of the inflammation and the vascularity of the part. It is generally thickest, for reasons already stated (p. 111), on the posterior and superior wall of the trachea.

4. The exudation of croup is not essentially different from that which occurs upon the same membrane when in a state of inflammation in the adult; nor from that which occurs upon other inflamed mucous or serous membranes. In other words, the exudation of the plasma of the blood occurs, not only in all cases of croup, but also in all cases of inflammation of membranes both mucous and serous.

The fact that false membrane does sometimes form in the laryngitis of adults has before been alluded to (p. 109). It is also well known that false membranes have been formed in cases of inflammation of the rectum, the vagina, the uterus, the nasal passages, and the pharynx. In all these cases we are forced to admit the presence of precisely the same kind of exudation as occurs in croup; since "a false membrane is in all cases formed from the plasma of the blood" (*Peaslee*). Laryngitis in the adult is rarely accompanied by the formation of a false membrane for the reason that the exudation is usually at once removed by coughing. When it is so accompanied, it is generally in persons who either from habit or inability do not expectorate at all (*Peaslee*). But aside from external circumstances and influences, the result of organization of the exuded plasma is, doubtless, influenced by the condition of the blood from which it is derived. In all inflammations the organizability of the exudation is probably proportionate to the amount and plasticity of the fibrin in the blood. Now it is well known that in inflammations of serous membranes, the fibrin of the blood is increased in a greater proportion than in inflammations of mucous membranes. The external conditions under which the plasma is exuded in the former, are also more favourable to the result of organization than are found to exist in the latter, as already shown (p. 111). Hence, as we should expect, inflammation of serous membranes is more frequently productive of false membrane, than is inflammation of mucous membranes. It is also well known, "that all the formative processes are in much less time completed in the young than in the adult animal; and it is in accordance with this ultimate fact, that Jurine and other experimenters could artificially produce false membranes in the air-passages of young animals alone. In adult animals, the exudation would become detached before its organization was complete."[1] We believe this to be the chief reason why inflammation of the air-passages is productive of false membrane so frequently in children, and so rarely in adults. The time required for the organization of the exudation is much less in the child than in the adult; and the probability of its being removed before organization is complete is also much less, since young children do not expectorate at all.

But false membranes do sometimes form in inflammation of the air-passages in adults, and also in inflammation of the mucous membrane of other parts, as already mentioned (p. 112). And wherever this result occurs, it will be found that the combination of circumstances already noticed as favourable to such a result has obtained. It may therefore, we think, be safely asserted that the apparently different results of inflammation of the air-passages in children and in adults, offers nothing incompatible with the proposition that the exudation is alike in both; but that they are rather precisely what we should expect from a consideration of the respective conditions present in the two classes of cases. For the same reason, we should infer also that the occasional formation of false membranes in inflammation of the mucous membrane of other parts, was rather the result of a fortuitous combination of circumstances than of a peculiar exudation.[2]

As confirmative evidence in support of this proposition, it may also be cited that the microscopical researches of Gerber, Henle, and others, established long ago the uniform presence of exudation corpuscles upon inflamed mucous membranes.

5. The exudation relieves, more or less completely, the inflammation which has produced it. This we believe to be true of all inflammations, but more especially so of all inflammations of membranes. The engorged vessels are relieved by the exudation; the circulation is again freely established; and thus the inflammatory action is terminated. Upon this point Dr. Ryland says: "The secretion of the lymph weakens the inflammation most commonly, and in the end puts a stop to it entirely."[3] And Dr. Peaslee remarks, that the "exudation always at once puts a stop to the inflammatory process in the precise part where it occurs, but it does not necessarily preclude its return in the part."[4] This proposition is of practical importance. After exudation has occurred and the false membrane formed, it is no longer inflammation with which we have to deal, but its results. And hence the depletive treatment, so proper and beneficial at first, becomes now improper and useless, if not absolutely injurious. The fact should be borne in mind, however, that the inflammation may extend *downwards* after exudation has occurred in the larynx and trachea.

6. It is an important fact that the false membrane formed from the exudation of an inflamed mucous membrane, never becomes *vascular*. In this

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[1] A Monograph on the Pathology and the Rational Treatment of Croup. By E. R. Peaslee, A. M., M. D., p. 6.

[2] Dr. Peaslee says: "It was remarked several years ago by Dr. Alison, that there is in all inflammations, a tendency to the exudation of plasma from the vessels of the inflamed part. We maintain that in all inflammations an exudation actually does occur." (*Monograph on Croup*, p. 5.)

[3] Diseases and Injuries of the Larynx and Trachea, p. 134.

[4] Monograph on Croup, p. 11.

respect, there is an important difference between a false membrane, formed upon a mucous membrane, and one formed upon a serous membrane. The latter, as is well known, often becomes vascular and permanent; the former *never* becomes so; and it is therefore impossible for its connection with the mucous membrane to be maintained for a long period of time. Sooner or later its vitality will cease; pus will be formed between it and the mucous membrane by the degeneration of exudation corpuscles, and the false membrane will be gradually loosened and cast off. This result will certainly occur if the patient's strength hold out sufficiently long. The time necessary for its completion will vary in different cases, but will not probably exceed a week. It is probable that the false membrane is not thrown off in a perfect state, so as to be recognized as such in every case in which it is formed; but that it may sometimes become converted into pus, and in this state be removed.

7. The inflammation commences generally in the fauces; sometimes in the larynx; but at whatever point it may commence it extends *always downwards, never upwards.* This fact is now well established by the observations of Rokitansky, Hasse, and other eminent pathologists. Its important therapeutical bearing will be at once seen, when we reflect that a fatal termination is often brought about by an extension of the inflammation to the smaller subdivisions of the bronchi. It becomes, therefore, an important point in the treatment of croup, to arrest the inflammation before it has extended to the bronchial tubes. The earlier the inflammatory process is arrested, the more nearly will the exudation be confined to the larynx and trachea; and the more reason shall we have to hope that, if it becomes organized, it will not sufficiently interfere with respiration to endanger the life of the patient.

8. Laryngismus is a constant attendant upon croup, and increases in no small degree the distress and danger of the disease. Whatever may be the true explanation of the fact, its first accession occurs, in the majority of cases, during sleep, and generally in the early part of the evening. This fact is supported by the uniform testimony of almost all who have written upon the disease, and must, we think, coincide with the observations of every practitioner. The accession of the laryngismus does not probably coincide precisely with the commencement of the inflammation. This may, and generally does exist, for a longer or shorter time before laryngismus is excited. The condition of sleep seems to offer something favourable to its accession; so that a degree and amount of inflammation insufficient to excite it in the waking state, becomes sufficient to do so during sleep. The appearance of the laryngismus is generally considered as marking the commencement of the disease; yet we think it will be found almost uniformly, that more or less febrile action has been present for, at least, several hours preceding its accession. The laryngismus, when once excited, is never entirely absent throughout the disease; but is subject to exacerbations and remissions. Exacerbations frequently occur during the day, but oftener at night. The tendency to nightly exacerbations is usually marked, and probably depends upon the same causes as determine its first accession at this period. This marked tendency to nocturnal accession and aggravation of the laryngismus, is thus ingeniously explained by Dr. Robert Turner.[1] The stridulous respiration and croupal cough are owing to contraction of the rima glottidis. The superior laryngeal is the excitor, and the recurrent laryngeal, with the crico-thyroid branch of the superior laryngeal, the motor nerves, which constitute the circle by which the aperture of the glottis is governed.

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[1] Braithwaite's Retrospect, part xxx. p. 264.

Inflammation of the mucous membrane alone, or combined with any of its consequences, is capable of producing contraction of the glottidean muscles, through the excito-motor circle above named.

"In every form, case, and stage of laryngo-tracheal inflammation, when a degree of severity, of which stridulous respiration is the token, has been attained, there exists a structural lesion which will excite to action the constrictor muscles of the glottis."

The following explanation of the proclivity to nocturnal invasion and aggravation of the laryngismus flows from the preceding positions: "Volition," says Dr. Marshall Hall, "has a constant influence over some of the muscular actions, of which we are almost unconscious, and which we only discover by carefully observing the effects of its subtraction. The acts of respiration originating, as they do, in the reflex function of the spinal cord, are nevertheless regulated and rendered equable by this silent but constant influence and agency of volition." Hence, during sleep, when the regulating and equalizing influence of volition is suspended, the glottidean contraction is excited by a degree of inflammation in the laryngeal mucous membrane incapable of exciting it, when the glottidean muscles are under the control of the cerebral system. The laryngismus is an important element in croup, both in a pathological and semeiological point of view. In some rare cases, the life of the patient is terminated at once, by a severe and long continued paroxysm. And in all, the laryngismus is an important agent in producing the obstructed respiration and fatal asphyxia. Dr. Williams says, upon this point: "The share which spasm has in causing the dyspnœa (of croup) may be inferred from the fact, that in no case have the air-passages been found so much blocked by the albuminous secretion as to account for the amount of the obstruction; and in many cases the constriction has appeared greatest where little or no exudation was found after death."[1] Dr. West also says, that the spasmodic condition of the muscles of the glottis endanger the patient's life more than the mere extent of false membrane in the air-passages. The laryngismus interferes with respiration, both by obstructing the ingress of air to the lungs directly, and by preventing expectoration. "Much of the inflammatory products, solid and fluid, which accumulate in the trachea and bronchi in protracted cases, would doubtless be ejected, if a more patent state of the orifice existed throughout the attack."

9. The presence of the false membrane has been considered by many as constituting the chief danger in croup; and the leading indication in treatment, therefore, to procure its expulsion. That the false membrane alone, when confined to the larynx and trachea, would never of itself produce a fatal termination is proved by the observations of Williams and others, before mentioned. It is also well known to every one at all conversant with the post-mortem appearances in this disease, that in many cases false membranes are found insufficient in amount or extent, to have had any agency in the fatal termination. It is also well known that expectoration of tubes of false membrane is by no means always followed by recovery. Acute laryngitis is a serious and fatal disease when occurring in the adult, although then generally unaccompanied by false membrane. We need not wonder, then, that inflammation of a part which is so often sufficient to destroy the life of the adult, should also be sufficient to destroy the life of the child, and that independent of any accidental complications or consequences. It ought not to be overlooked, that the presence of the false membrane, especially when

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[1] Treatise on the Diseases of the Respiratory Organs, p. 142.

extending to the smaller bronchial tubes, increases the danger of the patient. Neither ought it to be overlooked, that its presence is not the only or chief cause of the obstructed respiration, and that its removal, however secured, is by no means uniformly followed by recovery or amendment.

Causes.—The most frequent cause of the disease is, no doubt, exposure to cold, or to cold combined with moisture. Vicissitudes of weather and of temperature, have considerable influence in producing it. In infants, the disease is said to be often occasioned by sleeping in very cold chambers after having been all day in hot rooms. It is said to be most prevalent in localities which are low and moist. A cold and moist wind, especially when alternating suddenly with a dry and warm one, has considerable agency in producing the disease. It occurs at all seasons of the year, but is most frequent in those that are cold, and subject to sudden and marked variations in temperature. Probably three or four times as many cases occur during the six months between October and May, as during the remaining six months of the year.

The narrowness of the larynx during infancy and childhood has, no doubt, great influence in causing the laryngismus. The disease, although not absolutely confined to any age, is most common between the first and seventh years. It often occurs, however, during the first year, and after the seventh. M. Duges has seen it in an infant a few days old. Home says the earlier children are weaned, the more liable they are to the disease; and Copland states that he has seen it much the most frequently at the early age of three, four, five, and six months in children which have been brought up by hand; and in a still greater number of instances at from seven months to upwards of a twelvemonth in those which have been recently weaned. Our own observations accord with this.

The disease occurs more frequently in boys than in girls. Jurine treated ninety-one cases previous to 1808, fifty-four of which were boys, and thirty-seven girls; and during 1808, twenty-eight, of which eighteen were boys and ten girls. Goelis treated two hundred and fifty-two cases of the disease, one hundred and fifty-four of which were boys, and one hundred and eight girls.

And of four hundred and twenty-nine which died of croup in Massachusetts during 1852, two hundred and forty-three were boys, and one hundred and seventy-eight girls; the sex of eight not being reported.

There can be no doubt that both the frequency and type of the disease are modified by epidemic influences. A distinctly epidemic form of the disease was observed by Baillou, in Paris, in 1576; by Ghisi, at Cremona, in 1747; by Starr, in Cornwall, in 1748; by Rosenstein, in Upsal, &c., in 1762; by Van Bergen, in Frankfort, in 1764; by Wahlborn and Baeck, in some parts of Sweden, in 1768 and 1772; and by various observers during the present century, both in Europe and the United States.[1]

Several authors have maintained that the disease may occasionally prove infectious. Such cases are probably the result of the same causes, acting upon similar states of susceptibility and disposition.

The disease is unusually prevalent in certain families, and hence Cheyne and some others conceive the existence of an hereditary tendency in the disease. This is, however satisfactorily explained, as remarked by M. Desruelles, by the susceptibilities of age and temperament, being often necessarily the same in several of the same family; and by their being exposed to the same agents, and placed under similar circumstances.

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[1] Copland's Dictionary of Practical Medicine, vol. i. p. 530.

Copland ranks among the most frequent causes of the disease, the retrocession of eruptive diseases, and the suppression of other eruptions, or of discharges, secretions and excretions.

Diagnosis.—The diagnosis of the disease, though in general easy, is not always so. It is, perhaps, most liable to be confounded with simple laryngismus and catarrh. It is exceedingly desirable in respect of all classes of cases, that a correct diagnosis be formed as early as possible. "We are decidedly of the opinion," says Prof. Peaslee, "that if the usual 'perturbating' treatment of the disease (croup) is to be carried into execution, the little patient's prospect of ultimate recovery will, in most cases, be at least as good, if we commit the mistake of deciding that the disease does *not* exist when it actually does, and thus give the patient the chance of recovery without any medication at all, as if we err in the opposite direction, and therefore apply the treatment, although there is no serious disease at first."[1] Attention to the following points, however, will generally enable us to distinguish croup from the diseases above mentioned.

Laryngismus is sudden in its accession, and as sudden in its cessation. It is not accompanied by fever. The respiration during the attacks often resembles almost exactly that of croup; but is entirely free from stridor between them. There is no hoarseness of voice, or croupal cough during the interval, though both may be present during the attack. There is no redness of the fauces.

In *croup* the attack is more gradual, and the cessation never sudden. The stridulous inspiration and croupal cough, though often apparently sudden in their accession, are generally preceded, for a few hours, at least, by symptoms of general indisposition, with more or less fever; and often for two or three days by catarrh. The stridor of inspiration may also be detected by the stethoscope or ear, applied directly to the larynx, before it becomes audible at ordinary distances. Inspiration retains, in a greater or less degree, its stridulous character between the paroxysms; and the croupal cough and hoarseness of voice are never absent in the course of the disease. There is generally fever. The fauces are usually injected, and sometimes covered with patches of false membrane.

The condition of the patient and "the prevalent medical diathesis" of the time will also aid somewhat in the diagnosis, in doubtful cases. If in a doubtful case we ascertain that the patient, or an older child in the same family, has had previous attacks of laryngismus, with similar symptoms, and croup be not particularly prevalent at the time, we may calculate with considerable certainty that the disease is not croup. In such cases, an emetic of ipecacuanha will usually remove at once all unpleasant symptoms. In *catarrh* there may be hoarseness of the voice, redness of the fauces, and cough. But the respiration, though hurried, is not *stridulous*, and the cough has not the peculiar character of that of croup. There is usually no fever.

Prognosis.—A favourable termination may be expected when the form of the disease is mild, the frequency of the pulse moderate, and the respiration comparatively quiet. Still the physician cannot be too strongly impressed with the fact that no case of croup is devoid of danger. In more severe forms of the disease, when about to terminate favourably, the pulse becomes less frequent, respiration easier, the cough looser, followed by viscid expectoration containing often fragments of membrane, and the voice more natural. The urine, also, becomes more copious and of a paler colour. Occasionally, a copious perspiration seems to mark the commencement of a return to health.

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[1] Monograph on Croup, p. 13.

We have reason to fear a fatal termination when there is great frequency of pulse and heat of skin early in the disease, with great difficulty and stridor of respiration. When, notwithstanding treatment, the urgency of the symptoms increase; when the countenance becomes livid, or the lips purple and the cheeks pale, tumid, and cold, the pulse very frequent, weak, and irregular, and the patient stupid and drowsy, showing that the vitality of the nervous centres is failing for want of their due supply of oxygenated blood, a speedily fatal termination may be anticipated. The prognosis will also be modified by the presence or absence of complications with bronchitis, pneumonia, or other diseases; such complications, although not necessarily fatal, adding greatly to the danger of the patient.

Treatment.—The indications in the treatment of croup, as founded upon the preceding views of its nature and pathology, are as follows:—

I. To subdue the inflammation.
II. To moderate the laryngismus.
III. To prevent the formation of a false membrane.
IV. To produce the discharge of the false membrane when formed.
V. To support the patient's strength.

I. *Remedies for subduing the Inflammation.*—In our selection of remedies for this purpose we shall be governed somewhat by the age of the patient and the general type of the disease. Whilst the treatment should in all cases be prompt and judiciously vigorous, the delicate age and susceptibilities of the patient ought never to be lost sight of. In sthenic cases of croup, where febrile action is high, and before it has been moderated by the occurrence of exudation, *bloodletting*, either general or local, may be resorted to. This remedy, however, is not appropriate in asthenic cases, nor in sthenic cases generally after the exudation has been poured out. Should the febrile action, however, continue high after exudation has occurred, indicating an extension of the inflammation downwards in the air-tubes, and the sthenic type of the disease be well-marked, the abstraction of blood may still be beneficial. The general fact, however, should be remembered that very young children bear the loss of blood badly. We would not advise *general* bloodletting in a patient under six years of age. If the patient be six years old or over, and robust and plethoric, and febrile excitement high, venesection may be resorted to with safety and advantage. In younger patients, where bloodletting is indicated by the severity of the symptoms and the sthenic character of the disease, it should be done locally by the application of leeches or cups. One or more cups may be applied between the shoulders, or to the nape; or two or three leeches to the top of the sternum or throat. In either case the quantity of blood taken should be carefully adapted to the age and condition of the patient. An ounce or an ounce and a half for each year the patient has completed will generally be borne. The value of this remedy has been variously estimated by different writers. With due regard to the character of the cases to which it is applied, we consider it a valuable remedy in fulfilling this indication; but neither general nor local bloodletting should be resorted to in any case in which they are not clearly indicated.

Tartrate of Antimony.—This is a remedy of great power and efficiency in fulfilling this indication. In many cases in which bloodletting would otherwise be indicated, this may be so administered as to form a safe and valuable substitute. It should be given in small doses, frequently repeated, so as to maintain a constant and steady sedative effect upon the circulation. It is generally proper to begin with doses of one-thirtieth to one-twentieth of a grain dissolved in water every hour or two, for a child one year old. For a child three or four years old the dose may be increased to one-fifteenth or one-tenth of a grain; the quantity given may be increased or diminished according to the effect produced. When administered in this way, its action upon the circulation is generally prompt and decided. The skin becomes cooler and the pulse slower and softer. The amount and frequency of the dose may be increased or diminished, as is found necessary to secure and maintain this effect.

In administering this remedy, it should be borne in mind that severe prostration is sometimes produced by it in very young children, and in those of a debilitated constitution. In all cases the patient should be carefully watched, and, upon the first appearance of prostration or diarrhœa, the medicine should be diminished or altogether withheld till the symptoms again indicate its repetition. It is not uncommon for diarrhœa to occur suddenly during its administration, and this diarrhœa it is sometimes exceedingly difficult to check. The stools are peculiarly watery and without odour. "An infant six months old has been destroyed by one-thirtieth of a grain of this remedy, and another barely escaped with life after taking, in three doses, sixty drops of the hive syrup." (*Peaslee.*) In the majority of cases of sthenic croup, this remedy cautiously administered, as already advised, constitutes our main dependence, so far as internal medication is concerned, for arresting the inflammation. But it is not well borne in asthenic cases, and in those of a more sthenic type, after exudation has occurred and the febrile excitement somewhat subsided; it should generally be given in diminished doses. If vomiting is produced by the remedy, its sedative effect is diminished. We consider it, therefore, more efficient in controlling the inflammation when its administration is so regulated as not to produce this effect. The addition of opium in very small doses increases the tolerance of the medicine.

When a sufficient amount of the medicine to produce the desired effect upon the circulation is not borne by the stomach, and opium is not contraindicated, we are in the habit of adding one-half a drop, or more, in proportion to the age of the patient, of tincture of opium to each dose. The same addition may also be made when called for to diminish the action of the antimony on the bowels. This remedy has been used and recommended by some in very large doses in this disease. The largest quantity we have ever seen asserted to have been given, is in a case reported by Prof. Mettauer, of Baltimore, in the *Boston Medical and Surgical Journal*, vol. xiv. To a child about nineteen months old he gave, in a little more than two hours, the enormous amount of *half an ounce*, with as much ipecacuanha and antimonial wine.[1] Recovery followed; *post hoc, ergo propter hoc.* Prof. Mettauer remarks, and we think very appropriately, that this case "*furnishes new evidence of the astonishing resources of the infantile constitution, and its tenaciousness of life.*" We are no advocate for what is generally termed "*heroic treatment*," and especially when the subjects are young children. Large doses of antimony are, in our opinion, unsafe and unnecessary in the treatment of this disease. The object is to produce and maintain a decided sedative impression upon the circulation without producing prostration. And this we believe to be best secured by administering the remedy in small and frequently repeated doses.

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[1] The following extract from Prof. Mettauer's "Case of Protracted Croup," shows the manner in which the remedy was administered. After describing the condition of the patient and the preliminary step of moistening the mouth, he says: "I next carefully introduced into the stomach, with a teaspoon, a mixture composed of five grains of tartar emetic and ten of ipecacuanha, rendered semifluid with antimonial wine. This effort was finally successful, but the accomplishment of it was exceedingly difficult. A second dose of the medicines, mixed in the same manner, only augmenting the proportion of tartar to twenty grains, was quickly prepared and administered. After this attempt, a third and succeeding doses were prepared and administered in rapid succession; and I was now emboldened to give a heaping teaspoonful of tartar at each dose, only employing the ipecacuanha and antimonial wine in quantities sufficient to

Lobelia Inflata.—When the tartrate of antimony, administered as above advised, causes troublesome diarrhœa, we have found the lobelia a valuable substitute. We believe it to approach more nearly in its operation to the tartrate of antimony than any other remedy we possess. It is a powerful remedy, and should be cautiously administered. We are in the habit of prescribing both the ethereal and the alcoholic tincture. Either may be given to a child one year old in doses of five or six drops every two hours, and the quantity or frequency of the dose may be increased or diminished according to the effect produced. With older children larger doses may be commenced with; but, in all cases, it is best to begin with moderate doses, and increase the quantity gradually, if necessary, to produce the desired sedative impression. Should symptoms of prostration be produced by the remedy, it must be at once withheld; and when the circulation again rises, smaller doses may be administered. It should not be given in asthenic cases.

Nitrate of Potash.—The sedative properties of the nitrate of potash are slight compared with those of the remedies already mentioned. It cannot, therefore, in any case be relied upon for arresting the inflammatory process. In asthenic cases, however, in which either of the preceding remedies would be deemed hazardous, and also in cases in which, from great irritability of the intestinal canal they cannot be borne, this remedy may be given; but rather as an auxiliary to remedies hereafter to be noticed, than as a chief means of arresting the inflammation. It may be given in doses of one or two grains dissolved in water, every two hours, to a child one year old.

Cathartics.—Early in the disease, if the bowels are not freely open, it is generally advisable to administer a gentle cathartic. By removing from the bowels all retained secretions and excretions, and, also, by relieving congestion of the portal circulation when present, we may expect to exert, indirectly, a favourable influence upon the course of the disease. From three to five grains of calomel is, probably, the best cathartic that can be exhibited for this purpose. Should it not operate sufficiently, it may be followed in a few hours by castor oil.

Emetics.—An emetic administered at the commencement of the disease seems sometimes to have the effect of arresting it at once. It is only, however, in the forming stage of the disease that such an effect can be expected. After the disease is fully formed, the repeated exhibition of emetics can only do harm.

When an emetic is indicated, ipecacuanha may be used, combined, in sthenic cases, with tartrate of antimony, and, in asthenic cases, with sulphate of zinc.

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suspend and render fluent so large a portion of the tartar. In this manner I proceeded, though not without much difficulty, and with fear and trembling lest the little patient might strangle, until the full contents of a half ounce vial of tartar emetic, and the same quantities of ipecacuanha and antimonial wine had been employed, requiring something more than two hours time for the accomplishment of this bold undertaking." (*Boston Medical and Surgical Journal,* vol. xiv. p. 102.)

The syrupus scillæ compositus is an excellent article for this purpose in many cases. Thirty or forty minims may be given to a child two years old, and repeated every fifteen or twenty minutes till vomiting is produced.

External Application of Cold.—This is considered, by some writers, less beneficial than warm fomentations. Goelis considered it a dangerous application. We are aware that, to be beneficial, it must be continuously applied. Unless this point be secured, it will do more harm than good. Judiciously applied, however, we consider it a valuable aid in fulfilling this indication. We generally make the application by suspending a small pail, nearly filled with water, over the throat of the patient, and hanging a few small strips of cotton cloth over the edge of the pail so that one end may be immersed in the water. In this way, a continuous dropping is obtained. One, or, at most, two layers of cloth are laid upon the throat to receive it. Care should be taken that the patient's clothes and bed do not become wetted by the operation. If more convenient, the water may be constantly dropped from a sponge upon the throat. The compress upon which the water is dropped should be thin, that evaporation may go on rapidly.

Applications internally to the Seat of the Disease.—Topical medication, in this disease, is of comparatively recent origin, not reaching back, at most, beyond fifteen years. Its great value and importance, however, are now fully established. The most efficient local application is, beyond doubt, a solution of the nitrate of silver. The value of this remedy as a local application in certain forms of inflammation has long been recognized and acknowledged by the medical profession generally. The first, we believe, to recommend its use in croup was M. Bretonneau. Guersent, Guiet, Bouchut, and other French practitioners, also recommend the same application. The strength of the solution used by M. Bretonneau was four grammes of the salt to thirty-two grammes of water; whilst M. Bouchut used ten grammes of the salt to thirty of water; and M. Guiet a still stronger solution. By all these writers the solution is directed to be applied to the throat and opening of the larynx only. The practicability and safety of introducing the solution *within the larynx* does not seem to have occurred to them. M. Bouchut, indeed, enjoins the greatest caution in making the application over the glottis, lest suffocation should be induced by too great a quantity of the liquid passing into the larynx, or by allowing the sponge to remain too long upon the glottis.[1] The instrument used by the above writers for making the application, is a piece of bent whalebone, with a piece of fine sponge firmly attached to the end. M. Bretonneau directs the whalebone to be bent at five or six centimètres from its extremity at nearly a right angle.[2] Applied in this way at the commencement of the disease, there can be no doubt that many cases of croup may be at once arrested without passing the sponge into the cavity of the larynx at all. Generally, however, in order to secure the full benefit of the application, the sponge must be made to enter the larynx. Numerous and repeated experiments have now abundantly shown that the dangers, considered by M. Bouchut as attendant upon the application of this remedy to the fauces and opening of the larynx (*l'arrière-bouche et la partie supérieure du larynx*), do not exist; and that the application may be made, not only to these parts, but that the sponge may be also carried into the cavity of the larynx, and through and below the vocal cords, not only with perfect safety in every case, but with the most prompt and decided therapeutic effect. Dr. Horace Green was, we think, the first who conceived the idea of introducing the nitrate of silver within the larynx in this disease; and to him justly belongs the credit of having discovered and practically demonstrated both the safety of the operation and its great therapeutic value. He has also established the interesting fact, that "much less mechanical irritation is produced by the application of the nitrate of silver into the larynges of young children who are suffering from croup, than when it is introduced into those of adults who are affected with chronic disease of the larynx." The strength of the solution generally used is two scruples of the nitrate of silver in crystals to one ounce of distilled water. A solution of this strength is found to produce less irritation of the mucous membrane, and to exert a more beneficial effect than a weaker one. The application may be made by means of a laryngeal syringe, or a sponge probang like that recommended by M. Bretonneau. The latter is generally to be preferred, since it also answers another important indication hereafter to be mentioned, which the syringe does not answer. The application should first be made to the fauces and pharynx only; and then, after ten or fifteen minutes, the head of the child being held by an assistant, and the base of the tongue depressed with a spoon or some other instrument, the sponge, saturated with the solution, is carried over the top of the epiglottis, and pressed quickly downwards and forwards into the larynx. The sponge should not be more than one-third, or at most one-half inch in diameter for a child two years old or over; under this age, it should be somewhat smaller. The effect of the application of this remedy, when made early in the disease, is not infrequently to arrest the inflammation at once; and hence the importance of its early application, since, as already shown, the tendency of the inflammation is always to extend downwards in the air-tubes. In every case of true croup, this application should be made *at our first visit;* and, if possible, over the whole extent of the inflamed membrane. The period at which the application should be repeated will vary in proportion to the severity of the disease and the effect produced. In the milder cases, once a day may be sufficient, while in those more severe it should be repeated three or more times daily. The operation is generally followed by cough, and a more or less free discharge of glairy and adhesive, or purulent matter, according to the stage of the disease; commingled frequently with shreds and patches of false membrane. Marked amelioration of the dyspnœa and cough almost uniformly follows. It is important that the operator be certain that the sponge really enters the larynx, for if he deceives himself upon this point the solution will be expressed into the œsophagus below the opening of the larynx, and of course no effect will be produced upon the disease. It is also desirable that the solution should, as near as possible, be made to reach the whole extent of the inflamed membrane.

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[1] Si la cautérization de l'arrière-bouche et de la partie supérieure du larynx est avantageuse, elle a aussi ses inconvénients qu'il faut connaître pour tâcher de les éviter. La suffocation immédiate peut en être la consequence, si l'on a laissé trop longtemps l'épunge sur la glotte, et si une trop grande quantité de liquide a pénétré dans la larynx. Cet accident est fort grave, car il peut déterminer la mort, ou au moins la nécessité de pratiquer aussitôt la trachéotomie. (*Manuel Pratique des Maladies des Nouveaux-Nes, &c.* Par M. Bouchut.)

[2] L'appareil est composé d'une éponge fine de la grosseur environ d'une noix, fixée au bout d'une baleine assez forte et recourbée, à la chaleur d'une bougie, à 5 ou 6 centimètres de son extremité et presque à angle droit. L'éponge est imbibée d'une solution de nitrate d'argent (au degrée de 4 grammes de ce sel pour 32 grammes d'eau distillée.) Elle est introduite dans le fond de la gorge; l'épiglotte est soulevée et la solution exprimée au-dessus de la glotte. (*Formulaire Thérapeutique, &c., concernant les Maladies de L'Enfance.*)

"In most cases," says Dr. Horace Green, "it is only necessary to pass the sponge into the larynx; for the contraction of the glottis, which takes place on the introduction of the instrument, presses the fluid from the sponge, which trickles down, and is diffused over the tracheal membrane." When, however, the inflammation extends to the bronchial tubes, it is desirable to pass the sponge through the rima glottidis, and into the trachea if possible. In relation to the feasibility of this operation, Dr. Green[1] asserted, more than two years ago, that he had "succeeded in passing an armed probang down to the bifurcation of the trachea, probably over five hundred times;" and that employing "a probang nearly straight, armed with a sponge," he had pushed the instrument, not only down to the division of the trachea, but, turning it aside, *had "passed it at will, in many instances, into the right or left bronchus, with as much ease and safety as the catheter is introduced into the bladder."*

II. *Remedies for moderating the Laryngismus.*—The remedies already advised for arresting the inflammation will generally also, at the same time, fulfil this indication. The action of an *emetic*, especially in the early stage of the disease, is generally followed for a time by a marked diminution of the laryngismus. After the disease is fully formed, however, the frequent repetition of emetics for this purpose is not advisable or judicious. When we have reason to believe it due chiefly to irritating matters in the stomach, a suitable emetic may be administered, if not otherwise contraindicated. *Hydrocyanic acid* is a valuable remedy in fulfilling this indication, especially in the later stages of the disease. Decided relief of the dyspnœa, cough, and restlessness, may often be obtained by its administration. The *application of nitrate of silver* internally to the seat of the disease, as already advised under our first indication, is also an invaluable remedy for controlling the laryngismus in all stages and conditions of the disease. The *inhalation of watery vapour*, simple or medicated, with camphor, stramonium, or other narcotics, exerts also a favourable influence upon the laryngismus. Care should be taken, however, that they be not continued long enough, without intermission, to interfere with the already impeded aëration of the blood.

Tracheotomy.—The value and propriety of this operation in croup will be considered in another connection. It is conclusively shown, we think, by post-mortem appearances, that patients with croup do sometimes perish during a paroxysm of laryngismus from asphyxia *thereby induced.* In a case in which there seemed good reason to anticipate such a termination, notwithstanding the use of the remedies above advised, a resort to the operation would certainly be justifiable and proper.

III. *Means for preventing the Formation of a False Membrane.*—These may be included under two heads: 1. Remedies calculated to diminish the organizability of the exudation; 2. Means adapted to secure the removal of the exudation before the occurrence of organization. The remedies of most value under the first head are the preparations of mercury generally, of which calomel is much the most efficient. The value of this remedy in inflammations of serous membranes has long been an established fact in therapeutics. Its evident effect in these diseases is to promote absorption of the effusion, and to retard or prevent the formation of adhesions and false membranes. Absorption in these cases, is probably promoted rather by the direct effect of the mercurial upon the fibrin of the effusion than by any direct effect upon the absorbent vessels of the part. The direct effect of this class of remedies is probably to diminish the fibrin of the blood, and consequently that of the inflammatory exudation also. It may well be doubted whether the preparations of mercury have any effect beyond this in controlling either the progress or consequences of inflammation. But it is certain that they do produce this effect upon the plasma of the blood—*they diminish its organizability.* They are, therefore, valuable remedies not only in all inflammations of serous membranes, but also in all inflammations in which false membranes are liable to occur. For the purpose, then, of diminishing the organizability of the exuded plasma, small doses of calomel (¼ to 1 gr.) may be given every fourth hour or oftener; diminishing the quantity if any marked cathartic effect is produced, or adding, if necessary, to each dose a small quantity of the pulvis ipecac. comp. It should be borne in mind, however, that this remedy is capable of doing much harm in cases to which it is not adapted, even in the small doses above mentioned. "It is now pretty generally known that mercurial preparations (and especially calomel) are not well borne by scrofulous—and we will also add anæmic—subjects, whatever their ages or diseases. It produces great general debility; and if any accident exists requiring the aid of the reparative process, as an ulcer or a wound, it may indefinitely prevent this process from occurring, or even lead to phagedæna, or perhaps sloughing, in the part instead. The plasma always possessing a low grade of vitality (organizability) in such persons, becomes so far debilitated by the mercurial, that reparation is impossible; and it is only on discontinuing it, and substituting tonics and proper diet that the desired result ensues."[1] This condition of the blood-plasma in scrofulous and anæmic subjects, which prevents them from tolerating the action of calomel as just explained, diminishes also the probability of the organization of the exuded plasma in croup. If in any such case it is deemed necessary to give any mercurial, the pil. hydrargyri, or some other preparation, should be preferred to calomel.

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[1] See Braithwaite's Retrospect, Part xxvi. p. 60.

The *subsulphate of mercury,* or turpeth mineral, is a valuable substitute for calomel in such cases. It may be given in about the same doses that we would give calomel in sthenic cases. The time at which the administration of the mercurial is commenced is a matter of some importance. To produce its good effects, it must be administered before the exudation has become organized; and this is often early in the disease. In sthenic cases, therefore, we consider it advisable to commence its administration at once; waiting only to evacuate the bowels in cases in which a cathartic is indicated.

Alkalies.—This class of remedies also diminishes the organizability of the plasma of the blood. Their effect in this way, however, is much less than that produced by mercurials. They may be given in asthenic cases in which mercurials are inadmissible; and in such cases they constitute a valuable substitute for preventing the formation of a false membrane. The carbonate or bicarbonate of soda, or a corresponding salt of potassa, may be given in doses of from three to five grains to a child one year old, and repeated every fourth hour. We generally prefer the bicarbonate of soda. In the later stages of the disease, when a stimulant effect is also desired, the *bicarbonate of ammonia* may be administered with advantage. By diminishing the fibrin of the exudation they also favour expectoration, and thus contribute to the second end to be secured under this indication, viz: to secure the removal of the exudation before organization has occurred.

The remedy which has perhaps been most relied upon for this purpose, is *emetics* frequently repeated. These have been given to an extent and with a recklessness almost incredible. A careful examination of the mechanism of vomiting, we think, will show the complete impossibility of any matters contained in the air-tubes being ejected therefrom during the continuance of that act.[1] Carpenter says the act of vomiting "bears great resemblance to the act of coughing, differing chiefly in this, that in vomiting *the larynx is closed during the whole operation*, whilst it is only closed momentarily in coughing."[2] In both the first act is a full inspiration, by which the thorax is distended, the diaphragm becoming at the same time strongly contracted, and the rima glottidis closed; thus preventing the escape of the air from the air-passages. Next, in coughing, the rima glottidis is suddenly opened, and the abdominal muscles contracted forcibly, whilst the diaphragm at the same time relaxes; the lungs are thus suddenly compressed, and the contained air forcibly expelled from the air-passages. In vomiting, also, a full inspiration is first taken, the diaphragm contracted, and the rima glottidis closed, as before. Next, the abdominal muscles contract suddenly and forcibly, *but the rima glottidis remains closed, and the diaphragm strongly contracted.* The stomach is thus compressed between the contracted and depressed diaphragm and the abdominal muscles, and its contents expelled. But since the rima glottidis is closed, and the diaphragm contracted during the whole act, it is evident that nothing can be expelled from the air-passages. The use of emetics, therefore, for this purpose, is neither rational nor justifiable, since much injury is liable to result from them.

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[1] Prof. Peaslee's Monograph on Croup, p. 23.

Expectorants.—The alkalies have already been mentioned as favouring expectoration by thinning the exuded plasma. After febrile action has subsided, the syrup of senega, or of squill, may be given for the purpose of increasing the expectoration, and thus aiding in detaching and removing the exudation.

Counter-irritants.—These are supposed to favour the absorption of the exuded plasma, and, in this way, they may have some effect in preventing its organization. After febrile action has somewhat subsided, stimulating liniments or blisters may be applied for this purpose.

The Sponge Probang.—The application of this instrument saturated with a solution of the nitrate of silver, as already advised for subduing the inflammation, is also by far the most efficient means for securing the removal of the exudation. More or less of this exudation is usually removed directly by the sponge, and the application is generally followed by cough and a considerable amount of expectoration. The solution, moreover, destroys the organizability of the exudation, and aids in the disorganization and detachment of the false membrane when formed.

IV. *Means for producing the Discharge of the False Membrane when formed.*—These are precisely the same as those specified under the last preceding indication for securing the removal of the exudation before organization has occurred; the most important of which is the *sponge probang.* The sponge should be carried into the trachea; and the operation repeated as often as the urgency of the case requires. The presence of the false membrane may not be as already stated, the only or the chief source of danger in this disease; nor its removal from the air-passage, however effected, always followed by recovery. When present, however, it must greatly increase the danger by impeding respiration, both directly by its bulk blocking up the air-passages, and indirectly by increasing the laryngismus. Its speedy removal, therefore, is an object of the greatest importance. We would, therefore, urge the great importance, in all cases in which there is reason to suspect the existence of a false membrane, of a thorough application of this remedy for this purpose. A considerable number of cases are now on record in which the life of the patient has evidently been saved in this way. The sponge should be passed through the rima glottidis, and as low into the trachea as possible. This remedy, if it were not more efficient for this purpose than emetics, has certainly the great advantage over them of being entirely harmless in all stages and types of the disease. Emetics at this stage of the disease are generally entirely out of place, and ought *never* to be given for the purpose of removing the false membrane.

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[1] For an excellent argument on this point, see Prof. Peaslee's valuable and original Monograph on Croup, to which we acknowledge our indebtedness for many ideas and suggestions which we have seen nowhere else.

[2] Carpenter's Principles of Human Physiology, 3d American ed., p. 385.

Tracheotomy.—The opinions of medical writers of the value of this operation in croup are various and contradictory; and, under existing circumstances, it is perhaps impossible to form a just estimate of its value. When resorted to, it has generally been only in the last and hopeless stage of the disease, when little benefit could be expected from any remedy. There is much truth in the observation of Louis, that "as long as bronchotomy is considered an extreme measure (*un dernier ressort*), it will be always performed too late." It is evident that a correct estimate of the value of the operation can only be formed from a consideration of its results when seasonably performed. Considering the unpromising circumstances under which the operation has been generally resorted to, its results have been, on the whole, sufficiently favourable, in our view, to justify its continuance at least. We would, however, insist upon the importance—for the reputation of the operation as well as safety of the patient—of not delaying the operation in cases in which it is actually required, till all reasonable prospect of benefit is passed. The operation is said to have been much more successful in France than in England. This is accounted for partly, if not wholly, by the fact that the operation is performed earlier in the former than in the latter country. A judicious and persevering use of the local application of the nitrate of silver will no doubt diminish much the number of cases in which the operation would be otherwise required. In cases which have terminated fatally after the use of the sponge probang, it has been found that the false membrane was completely removed as low down as the sponge was passed.

It should be borne in mind that the object of the operation is not solely to allow more air to pass into the lungs than is admitted through the constricted rima glottidis. In cases in which a false membrane forms, the disease generally spreads rapidly to the trachea and also to the bronchi. In such cases, the benefit to be derived from tracheotomy is twofold:—

1. It enables us to aid in removing the false membrane, through the opening made in the trachea by mechanical means.

2. It enables us to apply topical remedies, such as the solution of nitrate of silver, through the same opening directly to the trachea and bronchial tubes. Trousseau, who has probably operated more times and with better success than any other surgeon, follows the operation with the application of the nitrate of silver in this way. And Prof. Peaslee thinks that circumstances may exist which would justify the operation for this purpose alone. Upon this point we may be pardoned for again quoting from his valuable Monograph on Croup. He says (p. 29): "But we may make an opening for the sake of making applications through it to the larynx, trachea, and bronchial tubes; and here an entirely new field opens to us. And we hope not to startle those overmuch who shudder at the idea, both of the operation and of the probang

now so frequently mentioned, if we say that, in our opinion, cases may occur in which it is justifiable to make an opening into the trachea for the mere purpose of applying the caustic solution and other remedies, directly to the seat of the disease, and to the extent required. If, for instance, the case be a sthenic one, while from spasm or swelling of the larynx, or some other cause, it is found impossible to pass the caustic solution through the rima glottidis, though it is very certain that a false membrame will be, or has formed, and all of several children of the same family attacked by the disease have died of it; in this combination of circumstances, certainly we should feel justified in performing the operation for the object now under consideration." In regard to the time at which the operation should be resorted to, no rule can be given. It should be performed, if at all, as soon as we become satisfied that other means will not prevent a fatal termination, and before the vital powers are exhausted through want of a due supply of aërated blood; whether it be at the end of twelve hours or a week. After the disease has extended to the smaller subdivisions of the bronchial tubes, and they have become to a considerable extent blocked up by the exudation, little benefit can of course be expected from the operation.

V. *Means for supporting the Patient's Strength.*—In the later stages of the disease, and throughout the course of the more asthenic cases, this is an important indication. It is to be borne in mind that the false membrane, when present, will be spontaneously detached and removed, provided the patient's strength holds out sufficiently long. We would, therefore, as far as possible, husband the patient's strength by the avoidance of all unnecessary medication, especially of powerful and prostrating emetics; and by the administration of suitable nourishment, adding, as the strength begins to fail, stimulants and tonics. Carbonate of ammonia, wine-whey, weak milk punch, or egg beat with wine may be used. Where a more permanent effect seems desirable, tonics may be also administered.

Summary of Treatment.—When called to a case of croup during the first paroxysm of laryngismus, it is generally proper to administer at once, if it has not been done before, a suitable emetic. We are in the habit of using for this purpose, more frequently than anything else, the syrupus scillæ compositus. To a child, two years old, this may be given in doses of half a teaspoonful, and repeated every fifteen or twenty minutes till vomiting is produced. In cases decidedly asthenic, we prefer a combination of ipecac and sulphate of zinc; and in sthenic cases, the tartrate of antimony, alone, or combined with ipecac, may be given instead of the above preparation, if preferred. The action of the emetic at this stage of the disease is generally followed by marked relief of all the urgent symptoms. The improvement, however, is rather apparent than real, and depends entirely upon a temporary relief of the laryngismus. Our remedies must now be directed vigorously to arresting the inflammation. Especially should it be borne in mind that the earlier, judicious, and vigorous treatment is instituted, the more prompt and beneficial will be its effects. Whilst the inflammation is confined chiefly to the larynx, we have it in our power, in addition to the general treatment, to apply local remedies to the whole of the diseased surface. This favourable period should, in no case, be allowed to pass unimproved. Experience has fully shown the danger and irrecoverable loss of delay. After the administration of the emetic, therefore, we would proceed at once to apply a solution of the nitrate of silver to the mucous membrane of the larynx with the sponge probang. This should not be omitted in any case of actual croup. If the patient be robust and plethoric, the dyspnœa considerable, and the pulse very frequent, it is generally advisable to apply cups or leeches in the manner already advised; or, if the patient be over six years old, to take blood from the arm. In milder cases, however, this remedy may be safely omitted. In cases in which it is required, a cathartic dose of calomel may next be administered; and afterwards, except in cases decidedly asthenic, the patient should take small doses of the tartrate of antimony every hour, or every two hours, according to the urgency of the symptoms. The amount and frequency of the dose should be so regulated, if possible, as to produce a decided impression upon the character and frequency of the pulse, without causing vomiting. At this stage of the disease, this is altogether the most important internal remedy we possess. At the same time, also, we generally order small doses of calomel every four hours. In the severer cases, cold water may, at the same time, be applied to the throat in the manner already advised.

In asthenic cases, in which the tartrate of antimony is not admissible, the nitrate of potash may be freely given in solution instead; and if any mercurial is considered necessary, the turpeth mineral, or pil. hydrargyri, should be substituted for the calomel. In such cases, local applications of the nitrate of silver must constitute our main dependence. They should, therefore, be made with the utmost thoroughness, if possible, over the whole extent of the inflamed membrane, and repeated as often as the symptoms indicate. If repeated every two hours, it will do no harm. In many cases these remedies will arrest the disease at once. It is not, indeed, unusual to see cases of considerable severity arrested within twenty-four hours by the sponge probang and tartrate of antimony alone. Should the disease, however, continue, notwithstanding the use of the above means, the application of the nitrate of silver should be repeated, and the tartrate of antimony continued in doses proportionate to the frequency and hardness of the pulse and the heat of the skin. Should the antimony cause diarrhœa or otherwise disagree with the patient, the lobelia may be substituted. If the laryngismus is severe, the patient may also be allowed to breathe the vapour of hot water, simple or medicated, with camphor or stramonium, or some other narcotic; but for a few minutes only at a time. The mercurial, in cases to which it is adapted, may also be continued; or in asthenic cases, the bicarbonate of soda, or some other alkali, may be administered with a view to diminish the organizability of the exudation. Should there be evidence in the progress of the disease of the formation of a false membrane in the larynx and trachea, the sponge-probang should be more frequently and perseveringly used. When the heat of the skin has subsided, some stimulating liniment may be applied to the throat, and the cold water, if previously applied, omitted. At this time, also, the senega or squill may be administered with benefit. Should the disease, however, progress, notwithstanding the above treatment, including the frequently repeated and thorough application of the nitrate of silver to the seat of the disease, and the lips become livid or purple, the dyspnœa great, and signs of exhaustion begin to appear, the tartrate of antimony and nitrate of potash should be at once omitted and stimulants cautiously substituted. At the same time, the operation of tracheotomy may be considered. The indications for this operation, and the objects to be secured by it, have already been sufficiently discussed, and need not be here repeated.

REVIEWS.

ART. XII.—*A Manual of Pathological Anatomy.* By CARL ROKITANSKY, M. D., Curator of the Imperial Pathological Museum and Professor at the University of Vienna, etc. Translated from the last German edition, by WILLIAM EDWARD SWAINE, M. D., CHARLES HEWITT MOORE, EDWARD SIEVEKING, M. D., and GEO. E. DAY, M. D., F. R. S. Four volumes in two. Philadelphia: Blanchard & Lea, 1855.

WHEREVER Rokitansky's name is known, he is understood to be the first living authority on morbid anatomy. Making that branch his exclusive study, and placed for many years in a position which gives him unexampled opportunities for its practical pursuit, he has accumulated an amount of information that places him far in advance of any other writer of the present time. The great General Hospital of Vienna, comprising in a single organization all the charitable medical institutions which in other cities are scattered and separate, is more like a vast citadel of hospitals than an ordinary establishment. It supplies in constant abundance all the usual forms of disease, besides presenting from year to year a certain proportion of the rarer varieties. All the patients dying here are, by law, subject to a *post-mortem* examination, provided their cases present a sufficient degree of interest to make it desirable. Their bodies are, as a matter of course, brought to the dead-house, for Rokitansky and his assistants to make their selection of those they may desire to examine. Besides this, in all cases requiring judicial investigation, the autopsies are conducted by Rokitansky. The bodies of all persons found dead, of those who are killed accidentally or by violence, or who die suddenly from any unusual cause in the city or its suburbs, are brought to the hospital dead-house and subjected to his examination. In the dead-house there are three rooms, one of which is devoted to the reception of the bodies, while the other two are autopsy-rooms. Every morning there are, for some hours, two autopsies going on at a time; and the visitor will sometimes see on each table two subjects, laid end for end, the dissections being carried on simultaneously by the assistants, while the chief supervises their work and dictates the record. The immense superiority of these advantages is so fully appreciated by the Austrians, that they are not disposed to allow the possibility of morbid anatomy being thoroughly studied anywhere else, and will sometimes scout, in a rather presumptuous manner, the pretensions of any foreign observer to maintain a pathological doctrine at variance with those taught in the Vienna school. With Rokitansky himself, however, there is no superciliousness of this sort; and his authority is all the more readily, and, we believe, universally, acknowledged.

A striking peculiarity of the book under consideration is the absence of quotations corroborative of the author's statements. Rokitansky's *Pathological Anatomy* is Rokitansky's own work. It is the record of appearances observed in the dead-house at Vienna, and does not depend for any considerable part of its interest or value on materials drawn from other sources. This peculiarity becomes very evident when a comparison is made with other works on similar subjects, of which so large a part is frequently made up of compilation and the repetition of statements previously made elsewhere. This sort of scientific independence is becoming every day a more essential requisite for authorship. Mere erudition in medical matters, a familiarity with what has been done and said by others, is no longer regarded with the same respect as formerly. It is still very properly considered as a requisite ingredient in a man's scientific education, but does not of itself give him any special claim to distinction. Still less does it enable him to take any prominent place as an author: and the man who now writes a book devoted exclusively, or in great part, to what is called the "literature" of his subject, is rather looked upon as having gained the attention of the public under false pretences, than as having added anything very valuable to the common stock.

By these remarks it is not intended to deny altogether the value of scientific compilation, if kept in its proper place and done in a proper manner. A systematic book, entirely made up of such compilation, it is true, hardly merits an existence; but, on the other hand, one which dispenses with all notice of previous writings is on that account certainly incomplete. If there be any deficiency in Rokitansky's book, it lies in this direction, since the reference which he makes in the Introduction to older writers is hardly more than an enumeration of their names, without anything like a complete or connected review of their works. It is a matter of some real importance, no less than of literary interest, after becoming acquainted with the actual state of our knowledge on any subject, to learn the previous phases through which our knowledge has passed before arriving at its present condition. As Robin expresses it, in his *Chimie Anatomique et Physiologique*, "no investigation is complete until we know the route which science has followed in the series of ages, and the successive efforts by which it has attained to its present position." No one, indeed, has better comprehended than Robin the true place and object of scientific compilation, as an entirely subordinate, but, at the same time, important, part of a systematic treatise. He observes in this connection, while speaking of the *proximate principles* of the animal body:—

> "We must remember that the study of the proximate principles, like that of everything else, has its roots running into the past. We must search for them, therefore, wherever they are to be found, and disentangle them from other facts of a different nature, by which they are surrounded and concealed. This is to be done, not merely from motives of curiosity, but in order to learn the successive attempts by which our knowledge has been accumulated; so that we may in some instances follow the example of our predecessors, and in others avoid wasting our time by the repetition of fruitless experiments." * * * * "It is important to remark that in every science, and particularly in the science of life, we must avoid confounding that which actually *is* with that which has been said—what is to be found in organized bodies with what is to be found in books—or science itself with the history of science. The history of science is, again, itself entirely distinct from *erudition*, which latter is acquainted only with scientific names and historical facts, without pretending to understand their affiliation."

The present translation must be regarded as quite successful, if we take into consideration the difficulties of the author's style, which is at times exceedingly involved, and never an easy one. While describing, for example, the "typhous process" in the mucous membrane of the small intestine, he says (vol. ii. p. 63):—

> "In the second stage the congestion is diminished; the injection and reddening, and even the swelling of the mucous membrane, retract within circumscribed spaces which correspond with Peyer's agminated glands, or occasionally

with solitary follicles. Rounded, or more commonly elliptical, tumefactions (plaques), varying in thickness from half a line to three lines, are formed, which result from the deposition of a peculiar substance in the tissue of the Peyerian plexus, and of the submucous cellular tissue. They are surrounded by a vascular wreath which stops short at their circumference, and by a marginal plane which rises abruptly, or is contracted, so as to appear pediculated. In the latter case they the more resemble flat sessile fungi, as they often present an umbilical indentation at their centre. According to the amount of matter accumulated, the mucous membrane is more or less tense, being intimately blended with the deposit, as this again is firmly and immovably attached to the muscular coat of the intestines."

Again, in speaking of deviations in size of the spleen (vol. ii. p. 131):—

"Deviations in size consist either in an abnormal increase or diminution of the organ. The former is of particular importance, and those tumours afford a special interest which depend upon congestion caused not by mechanical impediments, but by the peculiar relation of a morbid state of the blood to the spleen. With the rare exceptions of those cases in which, like analogous states of the liver, they are congenital, these conditions are acquired. They are either acute or chronic: in the former case they accompany other acute diseases, either during their entire course, or only during single stages; in the latter the tumefaction results from dyscrasiæ or cachectic conditions, which induce congestion, induration, and hypertrophy of the spleen. These terms, however, from referring mainly to external appearances, are apt to cause the real nature of the disease to be overlooked."

The meaning of the author is even sometimes rendered a little obscure, as in the following instance, where there seems to be a singular confusion of terms:—

"Cancerous morbid growths (of the mouth and fauces) do not *often* occur, if we except *two cases* in which a malignant tumour has made its way into the mouth and fauces from without. Cancerous degeneration of the tonsils is peculiarly rare," &c. "Still, cancer of the lips, and especially of the nether lip and of the tongue, where it chiefly attacks the posterior half, is not unfrequent." (Vol. ii. p. 20.)

Notwithstanding these peculiarities of style, however, the author's delineation of morbid appearances is occasionally remarkably graphic and complete. There is no more striking instance of this than his description of the third stage of typhous ulceration in the small intestine (vol. ii. p. 64):—

"The most remarkable change is now effected in the typhous patches and in the mesenteric glands; they soften. The patches become more tumefied, and, if the softening process does not affect them uniformly, they acquire an uneven, tuberculated surface. The deposit is converted into a grayish-red medullary mass; this may, from the imbibition of bile, be at once metamorphosed into a dirty yellow or brown slough, involving the investing mucous membrane. The slough shrivels up in a vertical and lateral direction, becoming loose at the edges and pultaceous, splitting in various directions, and detaching itself from the lowest stratum of submucous cellular tissue, by which means it is wholly or in part discharged; or the morbid product degenerates, when the epidemy is of a very intense character, into a loose, vascular, fungous growth, which is traversed by streaks of extravasated blood, or is entirely saturated with blood; it is the chief source of profuse intestinal hemorrhages, and is generally discharged piecemeal, without antecedent sloughing."

The arrangement adopted in treating of the different affections to which any organ is liable is exceedingly simple and complete. After a very few preliminary remarks, the author usually speaks first of arrest and excess of development; secondly, deviations of size; thirdly, deviations of form; fourthly, deviations of position; fifthly, deviations of consistency; sixthly, solutions of continuity; and seventhly, diseases of the tissue: taking up, in this way, the most difficult and important division of the subject last. In the section, for example, devoted to the morbid appearances of the *spleen*, he enumerates first those varieties of congenital malformation in which it is absent, and mentions that it is found double in biventral monstrosities. He refers to the occasional existence of small supplementary spleens, a variety of formation which is to be regarded, according to Rokitansky, not as an increase, but simply as a subdivision, of the main organ. There are said to be present occasionally as many as twenty of these in a single case. The deviations in size of the organ consist of acute or chronic tumefaction on the one hand, and on the other of atrophy, resulting either from occasional causes, as cholera, the internal use of steel, &c., or occurring naturally with the progress of age (senile involution of the spleen). The deviations in form are enumerated as presenting a tongue-shaped, platter-shaped, nearly cylindrical or angular mass; or an organ with its edges more or less deeply indented, so as to approximate, or even run into, the condition of transverse division. The deviations of position are those in which the organ protrudes from a fissure in the abdominal walls, is contained in an umbilical hernia, is displaced into the left thoracic cavity (diaphragmatic hernia), or is dragged down or pushed up by enlargements of other organs surrounding it. Under the head of *solutions of continuity* is mentioned the extremely singular and interesting fact that the spleen may be ruptured, not only accidentally, from external violence, but also spontaneously, in consequence of acute tumefaction. The author vouches for the occurrence of this spontaneous rupture of the spleen in typhus, in "typhoid cholera" (meaning probably the secondary fever, or stage of reaction), and in the hot stage of intermittent fever; and mentions that death may result from the consequent hemorrhage. Of diseases of texture occurring in the spleen, the writer considers the two most important, hyperæmia and inflammation, as at present but imperfectly understood, and as requiring for their elucidation a clearer notion than we now possess of the structure of the organ, and more especially an advance in our knowledge of the pathology of the blood.

> "These diseases of the spleen," he says, "are probably but rarely idiopathic; they almost always arise from certain anomalies of the blood and serum, or from certain discrasiæ (alterations in the constitution of the blood) which, although little known and as little understood, bear a remarkable and positive relation to the spleen. The spleen may, in fact, be considered as the most sensitive test for a variety of dyscrasic states of the fluids."

In speaking of hyperæmia of the spleen, it is to be regretted that some notice was not taken of the physiological variations in size of the organ connected with the digestive process. These periodical tumefactions, though not at all indicative of any morbid affection, might very readily mislead any one not acquainted with their existence, into mistaking a normal for a pathological appearance.

Another very frequent and striking *post-mortem* appearance, which we could wish the author had treated of a little more clearly, is *softening of the stomach* in consequence of disease, as distinguished from that which is simply the result of a digestive action of the gastric fluids taking place after death. Rokitansky admits three forms of *ante-mortem* softening of the coats of the stomach. The first is a "gelatinous" softening, in which the softened tissues are pale and transparent, with a few dark-coloured vessels running through their substance. This form, a disease peculiar to infancy, is thought to be connected with some subacute affection of the brain, most frequently hypertrophy or hydrocephalus, of sufficiently long standing to have induced general anæmia. It is this general anæmic condition that accounts for the pallor of the altered parts. The other two forms differ from the first in this particular, that the softened pulp is dark-brown or blackish in colour, owing to the presence of a considerable quantity of blood, which is blackened by the action of the gastric fluids. One of them depends, like the first, on a cerebral affection, which has, however, run a rapid instead of a slow course, and which has consequently brought on the softening without inducing any previous anæmia; and the other is thought to be "a sequela of certain cachexiæ, which were either originally acute or have become so under the influence of certain circumstances, viz: the exanthematic, the croupy, the typhoid, in the widest senses, pyæmia, acute tuberculosis, acute cancer—it is then to be viewed as a fatal degeneration of those diseases."

It is well known to every one at all versed in *post mortem* examinations, that softening of the stomach at its cardiac extremity, and often also of the adjacent organs, is very frequently the consequence of a *post-mortem* action of the gastric juice upon the dead tissues. Rokitansky himself, in speaking of the above forms of diseased softening, says that they "are to be carefully distinguished from cadaveric softening, the self-digestion of the stomach." It is not, however, easy to see what induces him to regard them as ever dependent on any other cause. In every instance, the softening is confined to the fundus of the stomach, or originates there and spreads thence to the neighbouring parts. It is distinctly stated that "in none of its stages" does it present, at any point, any of the signs of inflammation. It is "never circumscribed, but is shaded off gradually into the surrounding tissues." It occasionally proceeds to such an extent that the softened portion easily tears between the fingers, and these rents occur, it is said, "perhaps in rare cases during life, but probably oftener after death," giving rise to effusion of the gastric contents into the abdominal cavity. Rokitansky does not speak, however, of ever having observed any signs of peritonitis accompanying such an effusion, and indicating that it had taken place before death. On the contrary, when the gastric fluids are thus effused into the peritoneum or left pleura, the effusion "gives rise to a similar process (softening) in the serous membrane, accompanied by the evolution of gas." The fat of the softened tissues, also, is liberated from the fat vesicles, just as in ordinary digestion, and floats in the fluid mass in the form of oil globules. When the softening extends to the lower part of the œsophagus, a perforation sometimes takes place through the left side of the tube, and the gastric contents are discharged into the left pleura. The presence of a turbid fluid in the left pleural cavity with oil-drops floating in it, is, in fact, a pathognomonic sign of this sort of perforation, and from it alone the perforation of the stomach or œsophagus has been occasionally predicted in the Vienna dead-house, a prediction always verified on extending the examination to the abdomen.

Rokitansky himself admits, not only that softening may take place after death from the operation of cadaveric chemical changes, but also that it is not always easy to decide between this self-digestion of the stomach and morbid softening. "Nay," he says, "it is a matter of impossibility for the conscientious pathologist, unless he takes the previous disease and mode of death into consideration." The circumstances which may serve to distinguish ordinary cadaveric softening are, according to Rokitansky:—

1. The absence during life of all symptoms which indicated softening or the processes which give rise to it.

2. Sudden death from natural or other causes, during the digestive act, while the stomach is filled with chyme, without previous illness.

3. Limitation of the softening to the mucous membrane (?) and especially to the projecting folds, so as to form streaks.

4. And at the same time its extension beyond the bounds of morbid softening—its development being most remarkable at those parts at which there is a stagnation of the greatest quantity of the gastric contents.

We confess that we are unable to comprehend fully the reasons for connecting the softening of the stomach in any case with a cerebral disease, or with an "exanthematous, croupy, or typhoid cachexia" rather than with the digestive action of the gastric fluids, which always, when present, gravitate after death into the fundus of the organ, and accumulate there in greater or smaller quantity.

One of the most interesting portions of the work is the chapter on "Blood Diseases," or "Dyscrasiæ." Rokitansky gives a large place, in his scientific creed, to the active influence of the fluids; considering them at least as important in respect to morbid processes as the solids. "Humoral pathology," to use his own words, "is simply a requirement of common practical sense." Not that he is at all exclusive in his opinions on this point. He recognizes everywhere the existence of local, as well as of general diseases; but he regards the purely local morbid alterations as comparatively rare, while many of those which are often considered as such, he regards as the local expression only of a general disturbance of the system, and most often of an anatomical change in the constitution of the blood.

> "We believe," he says (vol. i, p. 276), "that ordinary pneumonia, with fibrinous product, is, for the most part, the localization of a pre-existent, that is, a precursorily developed crasis, characterized by an incontestable relation to the lungs, and to the mucous membrane of the air-passages."

Different varieties of inflammation thus owe their distinguishing characters to different modifications in the organization of the blood. He is led to this view, too, purely from his observations in morbid anatomy. Seeing so often, in his *post-mortem* examinations, the solids too little altered to account in any satisfactory manner for death, seeing various organs in different and distant parts of the body, presenting simultaneous and similar alterations, and observing, too, not infrequently unnatural appearances in the consistency, colour, and coagulability of the blood, accompanying the above phenomena, he is compelled to regard the blood itself in many instances as the part primarily diseased.

> "Not alone," he says (vol. i. p. 371), "has pathological anatomy demonstrated the existence of blood diseases in unlooked-for detail; it has at the same time solved a problem of the weightiest import. It has, we think, *decided in favour of a humoral pathology*, by demonstrating a primitive anomaly of blastemata; by demonstrating the endogenous impairment of the blood within the vascular system, in the inflammatory process, as the basis of the variation in exudates (blastemata); lastly by demonstrating the dependence of local morbid action upon the pre-existent impairment of the general circulation. Our attention will be here directed to diseases of the blood in its totality; and to local dyscrasial processes, with inflammation at their head, only in so far as these offer the basis and starting point for consecutive disease of the entire blood-mass. It is remarkable, however, and no less important for practice than for science, that the essential forms of these local dyscrasial processes—perhaps of all local dyscrasial disease—occur likewise as primitive affections of the entire blood mass. This is proved by the varied character of the products of the inflammatory dyscrasial process, and a comparison in detail of these products with anomalies of the general blood crasis. Thus primitive pyæmia, fibrin crasis, sepsis of the blood, severally occur independently of all local beginning, and of all infection. * * * * * It is the business of pathological anatomy to

determine both the physical properties of the blood in its totality, and also the relative quantity, and more especially the quality, of its more immediate components. The two main components which come peculiarly within its province are, first, those essential form-elements, the *blood-globules;* and secondly, the spontaneously separating, coagulating, solidifying *fibrin,* that component which, owing to its varying tendency to become organized, is, in an anatomical sense, the most important of all."

From this starting point, Rokitansky develops his remarkable theory of the *crases.* By the term "crasis" he means that special constitution or organization of the blood, produced by the admixture, in particular proportions, of the various ingredients (albumen, fibrin, fat, salts, &c.) of a particular quality. The crasis may, therefore, be a normal or an abnormal one. In the latter instance it is often spoken of as a "dyscrasis" or "dyscrasia." With regard to the mode of production of these abnormal states of the blood, they may be primary or secondary.

"To diseases of the solids, as local morbid processes in the broadest sense, affections of the blood stand in a twofold relation.

1. *The anomalous crasis is a pre-existent one—the primitive affection; the local disease a localization thereof—the secondary affection.* The point of localization, apart from the effect of concurrent external influences, is determined by a specific relation of the crasis to certain organs presided over by the nerves. The forms it assumes are chiefly those of hyperæmia and stasis—inflammation, absolute stasis—exudation, or without the latter a product formation completed within the bloodvessels; for instance, spontaneous coagulation of diseased fibrin, pus-formation within a greater bloodvessel, or within the capillaries of the organ. The relation of the various crases to the organs and textures, nay, even to particular sections of organs, is manifold. Thus the croupous fibrin-crases evince a very marked preference for the mucous membrane of the air-passages, and for the lungs themselves; the typhous crasis for the mucous membrane of the ileum; the exanthematous crasis for the common integument and for mucous membranes.

2. *The anomaly of the general crasis is consecutive;* that is, the consequence of a local disease, and especially of local dyscrasial processes, whereof the products are taken up into and affect the entire blood-mass. This happens

First, through resorption of the effused products by means of the lymphatics, or immediately into the veins.

Secondly, through reception into patent bloodvessels. This process includes the reception of products thrown out into the cavity of larger bloodvessels; pus, for example.

Thirdly, most of all through the off-flowing, and the return into the veins, of plasma degraded in the local process, in a manner corresponding with the quality of the exudate."

The different crases are designated according to the ingredient principally affected, or the character of the local process to which it gives rise. There is, in the first place, the *fibrin crasis;* in this, the fibrin of the blood is altered in quantity or quality, or both. A fibrin crasis is not necessarily characterized by an increase of coagulable matter in the blood (hyperinosis), but sometimes even by a diminution of it (hypinosis). Or the fibrin may be simply altered in character, so as not to present its usual physical appearances, or the ordinary phenomena of coagulation. The principal forms of this variety are three: the simple fibrin crasis, in which the effused fibrin becomes organized into false membranes, the "croupous" crasis, in which the fibrinous exudation has a tendency to liquefy rapidly, and become disintegrated, and the "tubercle crasis," in which the tuberculous deposit, according to Rokitansky, is of fibrinous origin, but degenerated in character. Then come *pyæmia,* or the purulent crasis, which is not only dependent on a purulent absorption and infection, but occurs also as a "primitive and spontaneous" affection of the blood—*plethora*, *nervous hypinosis*, the *typhous* and *exanthematous* crases, the *drunkard's* dyscrasis, the *crasis of acute tuberculosis*, which is regarded as different from that of ordinary or chronic tuberculization—the *cancerous* dyscrasis, *anæmia* and the *putrid* or *septic* crasis.

The last variety is regarded as consisting in the death, more or less complete (necrosis), and decomposition of the blood. It may present itself under the principal forms: 1st. A decomposition and necrosis of the blood, produced by a faulty diet (scurvy), the reception of corrupt matter, miasmata, animal poisons, &c., into the circulation, or by sudden and violent shocks to the nervous system, as concussion from falls, extensive crushing and laceration of the bones and soft parts, extensive amputations, overpowering electrical shocks, exhausting convulsions, difficult and prolonged parturition, or severe mental emotion. "In all these cases the blood is found attenuate, in colour comparable to a raspberry jelly, or of a dingy red, facile of imbibition, expanded in volume, often engaged in gas-development, frothy. Coagula, if present at all, appear as very inconsiderable, soft, curd-like fibrin clots. The corpses pass into putridity, under the phenomena of gas-development in the blood-vessels, emphysema in the textures, copious transudation of a dirty red serum into the serous cavities, and spontaneous vesication of the epidermis." 2d. There is also a decomposition of the blood which results from a "degeneration of the typhous, exanthematous, cholera, or drunkard's dyscrasis. Very often, however, these two forms do not differ in the appearances presented by the blood itself, and are to be distinguished only by reference to the accompanying or preceding alterations in other parts.

The above theory of blood diseases will not, perhaps, be adopted in all its particulars, by other pathologists. Rokitansky has himself, we understand, modified his views, of late years, in regard to various details of classification. We must expect, indeed, still further modifications to become necessary in any classification that might now be adopted, since there remains so much to be learned of even the physiological constitution of the blood, and its variation in different parts of the body. Still, it is an effort made in the right direction. The morbid anatomy of the solids has already carried us nearly as far as it is capable of doing; and the next addition of any great value to our present knowledge on the subject will undoubtedly be derived from a patient and well-directed anatomical examination of the fluids.

J. C. D.

ART. XIII.—*Letters to a Young Physician just entering upon Practice.* By JAMES JACKSON, M. D , LL. D. Boston, 1855: 12mo., pp. 344.

AMONG the physicians of Boston who stand first in age, as well as in character, learning, and reputation, one after another has given to the world a volume containing his gathered essays, or the results of his mature experience. These comparatively scanty productions seem to show that whatever else our eastern brethren may have performed, writing has not been their customary occupation. With natural powers, high cultivation, and a social unity rarely to be met with elsewhere than in their own city, we had a right to look for some higher proof of their knowledge and skill than a reputation which may fade from the memory of man before the tomb has hardly closed upon their ashes. That they have given us *some* pledge of their power, some token of their ability to sustain with honour the scrutiny of less partial judges than their own townsmen, only makes us regret the more that we should, so late and so scantily, have been furnished with their intellectual fruit. If elsewhere the empty and frivolous plague the public with their lucubrations, or the dullard weighs down our bookshelves with unread masses of print, we have all the greater cause for regretting that the eminent physicians of Boston have been so chary of their literary treasures, and done injustice to themselves while they disappointed the hopes of their distant friends.

The author of these letters has, even more than others, been chary of publishing his opinions and observations, perhaps too well content with the tender love of his patients, and the filial reverence which he has so long enjoyed from the members of his own profession. He does not appear to have ever contemplated the preparation of any systematic treatise for the press, for, in several portions of the present volume, he seems to trust entirely to his memory for the details of his vast and varied experience. But this defect is, in a great degree, redeemed by the scrupulous precision of his statements, and their practical interest. Indeed, no one can peruse these fragmentary sketches without being convinced that, as far as they go, they present a perfectly candid report of the author's observation and reflections, or without feeling that by the spirit of devotion to our art which animates them everywhere, he has added one more to the long catalogue of names which have adorned it with an imperishable nobility.

An introductory chapter upon the limits which Nature has set to the power of Medicine, is well adapted to elevate our just esteem of its beneficent action, and to silence the cavils of those who reproach us with its imperfections. The author seems to have adopted the motto *natura sanat, medicus curat morbos,* and to have applied it with even a singular conscientiousness; for, he tells us, that in his service at the Massachusetts General Hospital, he never reported any patients as *cured,* but only as *well,* "not implying that they were made so by the active treatment they had received there." We must confess, that scrupulousness so precise as this appears to do injustice to his own part in the restoration of his patients to health.

Among some very sensible remarks on Conduct in the Sick-room, we find the following view of the duty of a physician towards a patient whose life is in danger. Its accordance with what we have on other occasions maintained to be the dictate of true morality, induces us to quote it here:—

> "Be slow to give an alarm as to the result, especially to the patient; for to judicious friends it is best to state all your apprehensions. It is sometimes quite essential, though not so often as you might suppose, to hide your fears entirely from the patient, and from anxious friends who surround him. This is justified only where it is evidently for the welfare of the sick, to whom, certainly, you ought not to make your knowledge work an injury. Every one will admit the propriety of this where the mental powers are impaired. But also with young persons, whose minds are immature, and with persons who are morbidly apprehensive, it is often dangerous to acknowledge your fears. When conscious that you are influenced only by benevolent motives, and that you *must* deceive the patient, do it thoroughly; do not try to save yourself by equivocal expressions. If a patient of sane mind and of adult age demands your honest opinion, give it to him distinctly; even then do not couch it in the coarsest terms, but use the mildest words which will answer your purpose."

The remaining letters treat of various diseases, or rather of some of the more interesting points of their history, and among them several occur to us as peculiarly worthy of attention. To some of these we shall direct the reader's attention.

After a brief review of the physiology of the nervous system, the author concludes that many of its morbid affections do not, in the present state of our knowledge, admit of any explanation, and that our treatment of them must be founded entirely on experience, and "perhaps a blind experience." This we esteem to be a truth which, if generally kept in view, would spare both to teachers and pupils a deal of unprofitable mental gymnastics. Falling upon a section devoted to sick-headache, we devoured it eagerly, hoping to find therein some talisman for a sore evil which has too often defied our medical skill; but there was nothing else than the sad echo of general experience, that it usually diminishes at or before the age of fifty, and ceases before sixty.

The report on Intermittent Hemicrania is more cheering. This affection is usually connected with nasal catarrh, and is most common when influenza prevails. It lasts with daily, or rather nightly, intermissions for three weeks or longer, and is cured by sulphate of quinia, or by the solution of arsenite of potash. Of the former the author uses from twelve to twenty or more grains during the intermission, and goes on to increase the dose until buzzing of the ears, or a sense of tension in the head, shows the quantity to be sufficient. The arsenical preparation he gives, without regard to the paroxysm, in the dose of from five to seven drops at first, and augments each dose by one drop until some nausea is produced. These facts are interesting as relating to an intermittent affection in a region where no malarial diseases exist, and as showing that in the cure of ordinary periodical fevers quinia does not probably neutralize a poison in the blood, as some have suggested, but rather cures by virtue of its physiological operation upon the system.

The author believes that in a certain proportion of epileptic cases the disease is susceptible of relief, so as not to return without the operation of some powerful cause, but that such "relief is not to be attained by any medicine—but by diet." We are unwilling to subscribe to so disheartening a belief, for unless common experience is greatly at fault, there are several medicines—some narcotics and the oxide of zinc, for example—under which complete cures have been effected. At the same time there seems to be good reason for adopting the author's method, which consists in an entire abstinence from flesh and fish, a method under which he has seen many recoveries. In the larger proportion of cases it is admitted to have failed, but in none such did ultimate recovery take place under a different plan. The result which has been stated deserves serious attention from all who have to treat this terrible disease.

A similar dietetic treatment is recommended in cases of slight paralysis following apoplexy, or congestion of the brain, and where one attack is too often the precursor of others, more or less severe, but gradually increasing in severity until they prove fatal. We are assured, and it need not be said how well grounded we believe the assurance to be, that a vegetable diet in such cases seems to procure a complete exemption from the attacks, without reducing the muscular power, or preventing any reasonable amount of labour.

For *chorea*, our author considers oil of turpentine to be "the great remedy," and to be successful whether given early or late in the disease. He directs it in such doses as the patient can bear. The term *neuralgia* suggests to him a criticism which appears to us overstrained. The patient, he says, complains in plain English that she has *pain*, and the physician answers her in Greek that it is *neuralgia*. Now, it is certain that there are many forms of pain, and modern investigators have included certain of them under the term neuralgia, by way of indicating the isolation of the symptom, pain, from all of the other derangements of function or structure which usually accompany it. The term, then, expresses a fact, and describes a disease, and seems to be legitimate, as it certainly is convenient.

In an interesting chapter on Somnambulism, Animal Magnetism, &c., the phenomena of these abnormal states referred to are classed with those of the morbid condition known as double consciousness, and the so-called magnetic power shown to consist merely in an act of the will of the *magnetizee,* which is capable of inducing that condition. Like all other scientific investigators of this subject, the author is convinced, after a patient examination of the evidence, that the alleged power has not any existence independently of the patient's volition.

The febrile and irritative phenomena of *dentition* are happily compared by Dr. Jackson to those which attend other natural processes, such as puberty, conception, pregnancy, parturition, and the menstrual flow. He refers, more particularly than other writers, to the fact that analogous symptoms occasionally present themselves during the second dentition, that is, from the tenth to the thirteenth year. The patient loses his flesh and comeliness, and exhibits various nervous symptoms, including pain in the head and eyes, morbid sensibility to light, and even more distinctly marked diseases, such as chorea. For these symptoms he has found active exercise in the open air, with tonic and ferruginous medicines in some cases, the best remedy. They are very commonly attributed to worms, but the author deems these parasites innocent of the charge, as of most others which are usually set to their account.

Under the title of *ulcuscula oris,* which was given by Dr. Holyoke, the author describes as a peculiar affection, one which is, however, well known. He states it to be a different disease from aphthæ, but in this we think that he errs, unless he applies this title, as some do, to a very different affection, viz: pseudo-membranous stomatitis, or thrush. The disease in question is the follicular stomatitis of French pathologists, and is described under that name by West (*Diseases of Infancy and Childhood,* 3d ed. p. 429). The treatment recommended is also essentially the same; Dr. Jackson prescribing mercurial purges, and a wash of sulphate of zinc, and Dr. West, in general terms, correction of the gastro-intestinal disorder, and a solution of borax or of nitrate of silver as a local application.

In acute rheumatism, the articular form, we presume, Dr. Jackson does not appear to think that any treatment is competent to effect an immediate cure, although free evacuations and low diet from the first he considers useful. When the acute stage has passed, he thinks that a milk and vegetable diet, with sulphate of quinia, has been more successful in his hands than other means. Rheumatic gout, or that form of rheumatism which begins in the small joints and extends to the large ones, he confesses to be altogether intractable.

The eleventh letter treats of Phthisis and Hæmoptysis. It contains some very interesting statements illustrated by cases which go to show that hemorrhage from the lungs is not always the immediate precursor of *consumption,* although it may denote the existence at the time of pulmonary tubercles. But these tubercles may be rendered latent, or the formation of others may be prevented by a nutritious diet and by active exercise in the open air, and thus life may be prolonged in moderate vigour beyond the average term. Little is said of medicinal treatment, and nothing of the great remedy which has been so useful, and so overrated—cod-liver oil. Much has been said of late years, by certain specialists, of the prevention of pulmonary consumption, by treating tuberculous ulcers of the larynx, as if the disease advanced from this organ to the lungs. Dr. Jackson's experience coincides with that of all competent and candid pathologists; he says:—

"I have watched this matter for a long while, and have not seen any instance in which tuberculous disease travelled in this course. I have often seen patients have this trouble in the windpipe, and afterwards die of phthisis; but these persons have had the signs of disease in the lungs as early, or earlier, than the signs of disease in the windpipe."

A letter is devoted to that eminently American and peculiarly New England disease, *dyspepsia*. Its symptoms are well portrayed. Incidentally, the gastric states which induce vomiting are considered, and one is described and illustrated, which has no lesion to distinguish it, and no symptom but chronic vomiting. A fatal case of it is related which occurred in a female. We met with a perfectly similar case in the Pennsylvania Hospital in 1840. In the management of dyspepsia, accompanied with constipation, the author adopts the wise course of treating the former rather than the latter symptom. Confined bowels he would not often relieve by purgatives—for these medicines ultimately aggravate the evil—but rather by enemata of cold water employed habitually. If these are not sufficient, he recommends the so-called "dinner pill," and the medicine which has of late had so much vogue, strychnia in doses of from a twenty-fourth to one-twelfth of a grain. A similar treatment is appropriate in that torpid condition of the bowels (described p. 243) which so frequently affects "sedentary people, especially those of them who are fat and sluggish, moving slowly when they do move." In regard to the diet of dyspeptics, the author conveys a very important lesson in the following remark: "There is a notion that what is agreeable must be bad; but I hold just the contrary doctrine, unless when the patient is induced to take too much because it is agreeable." His precepts in regard to alcoholic liquors are remarkable as emanating from the citizen of a community where a large number of physicians could be found, not long ago, to affix their names to a paper which declared these liquors mischievous as drinks, and unnecessary as medicines. The day has gone by when arch-fanatics set their port and sherry a running down the kennel, or, with a less consistent morality, made a present of the poisons to their friends. "Before *the days of temperance reform*," Dr. Jackson knew that there was a danger in excessive indulgence in alcoholic liquors, and was therefore as cautious in prescribing their use as in prescribing opium, or any other substance capable of abuse. But he did not find in their abuse an argument for their prohibition. He says:—

> "I love to tell the truth, even when it is unfashionable. I believe that very many persons are benefited by the juice of the grape, and I choose to say so. Moreover, I believe that persons disposed to intemperance are not to be restrained from indulging their vicious propensity, by the abstinence of their more prudent neighbours. These are opinions at which I have arrived after much attention to the subject."

Such sentiments coming from one who, both constitutionally and habitually, is a model of temperance in all things, will perhaps have some weight as against the eruptive eloquence of platform orators, and are much more likely to prevent the beastly habit of drunkenness than any mere legal prohibition to imbibe alcohol. As regards the cure of that habit, we believe that the whipping-post would be vastly more effectual than tantalizing enactments which only whet the appetite of the drunkard by holding the object of his covetousness a little out of reach.

A very interesting letter is that devoted in part to the consideration of an affection designated as *a painful tumour near the cæcum*. Several cases are related at length, and the following summary of the symptoms is given: "They are, pain in the *right iliac quarter*, but not confined to this, for it often passes beyond the limits of this quarter, particularly upward, and a tumour, varying in size, so deep-seated in the abdomen as not to be felt without some direct pressure on the part, and more or less tender, sometimes very tender." Constitutional symptoms attend the disease in some stage of it, but they vary much in severity as well as in duration. Dr. Jackson is not inclined to regard the disease as consisting in phlegmon and abscess of the iliac fossa, nor is there any evidence in the cases he reports of pus having been discharged. In this view we partially coincide, because no marked febrile movement is mentioned as occurring in these cases, and, above all, no pain produced by extension of the thigh. But, looking at the symptoms in connection with the anatomy of the part, we are disposed to conclude that they depend upon the formation of an abscess between the posterior portion of the cæcum, which is unprovided with a peritoneal coat, and the tendinous fascia which covers the iliacus internus muscle. In the cases of Dr. J., as in those generally which terminate without a discharge of pus, the inflammatory process ended in resolution. In other words, we agree with his friend who suggested that the disease might be tuphlo-enteritis. A case occurred to the present writer in January, 1855, which confirms him in this conclusion. The patient, a man of middle age, and employed in the United States Mint, had been troubled with constipation. He was exposed to cold and dampness, and soon afterwards experienced a pain in the region of the cæcum. On the third day, a tumour apparently as large as a hen's egg, could be felt in the right iliac fossa. It was hard and sensitive to pressure. The movements of the right thigh were free; the pulsation of the right femoral artery appeared to be slightly less forcible than that of the left; there was no œdema of the right limb. The fever was moderate, and the pain dull and slightly throbbing. There was no vomiting. For several days the tumour enlarged, but more by a doughy swelling than by simple extension of its former outline. Under the use of purges consisting of calomel and compound extract of colocynth, with a blister over the tumour, and extract of hyosciamus as an anodyne, the fever subsided within two days, and the swelling gradually diminished. On the tenth day the man was able to return to his work, although a small hard tumour could still be detected in the seat of the original swelling.

The letter (XIV.) on Constipation of the Bowels, is marked by the usual good sense and prudent counsels of the author. He eulogizes the wheaten grits introduced by Dr. Warren as a remedy for this complaint, and passes in review other articles of food which have the same or a similar action. The habitual employment of *cold* water enemata, already referred to, he does not regard as liable to the objection which lies against warm and stimulant injections, that they tend to enfeeble the action of the bowels.

Bilious diseases—calculi, biliary, and urinary—and irritable bladder are treated of in the following letter. He alludes to the popular prejudice of ascribing all digestive derangements to the liver, which, " like the greatest rogue in the village, is accused upon suspicion whenever any mischief is done." It has so bad a reputation, he says, that it is not thought a libel to speak ill of it. Its supposed diseases are usually in the stomach and intestines. In some of those cases of *jaundice* which are accompanied with urine containing bile or its colouring matter, and with light-coloured feces, the author is of opinion that a gall-stone is retained in the common duct by *congestion* of its membrane, since he has nearly always found the symptoms decline under the use of free depletion by leeches on the region of the liver. He has succeeded in relieving the irritable state of the bladder in old men, by insisting upon a systematic attention to hygienic rules, avoiding articles of food found to disagree, and above all, by keeping the bowels regular without the aid of purgative medicines.

The subject of *boils* is discussed in another letter. Dr. Jackson confesses his inability to trace them to definite causes, whether rich diet or spare diet, or a strong or feeble constitution. Indeed, their occurrence as an epidemic proves that these elements of their causation are not absolute. He refers to the frequency of their production by cutaneous irritants, such as blisters, and also the so-called hydropathic treatment. Of their treatment, he thinks the best is the abortive one.

> "The boil cannot be jugulated, as it has no neck; but its head may be split open in its embryo state, and there will be an end of it. . . . Carry the point of a lancet through the middle of that pimple (the first stage), it will dwindle away. The sooner this is done after the pimple is formed, the better. The treatment succeeds, if adopted, on the second or third day, and even later it does some good. . . . This treatment is not worth trying after the fifth or sixth day; nor after the affection has extended deep into the true skin."

It is well known that these troublesome inflammations are apt to succeed one another, in single boils or in crops of them, and seriously affect the health, besides destroying the patient's comfort. The author has found the most effectual medicine against their recurrence to be sulphate of quinia given in large doses. He prescribes from twelve to sixteen grains in divided doses on the first day, and, if its peculiar effects on the head are not produced, the quantity is increased by four grains on the next day. On the day after some inconvenience has been occasioned by the medicine, the allowance is diminished by four grains, and continued during four or five days, after which it is gradually lessened to two grains a day. But it is not omitted entirely for three or four weeks.

It is worthy of notice that Dr. Jackson rejects poultices entirely from the treatment of boils. At particular times, he says, "they are thought to be comfortable; but, on the whole, I regard them as dirty and troublesome applications, and as often causing much discomfort to the patient." Occasionally, he thinks, for a few hours, a warm moist application, such as a fomentation with warm water in *spongio-piline* may be directed. "But much soaking of any kind is bad." A piece of lint dressed with simple cerate he esteems preferable. These views are peculiar, we believe.

The concluding letter, on the Treatment of Typhoid Fever, refers particularly to the use of emetics in this affection. It teaches that they are useful when taken within the first three days of the disease. When emetics were used, he found the mortality 1 in 11.53, and when they were not it was 1 in 8. When taken on the first day of the disease, the average day of convalescence was the 14.66th; when on the fourth, fifth, or sixth days, it was the 19.45th. In the same way for the intervening days, each day of delay in the administration of emetics added at least one day to the length of the attack. The author strongly insists on the necessity of the patient's remaining very quiet, and being restrained in his diet for some days after the favourable operation of the emetic. He advises that an active cathartic should be given on the day following the emetic medicine, and states this to be his habitual practice. Perhaps he has not allowed its full credit to the purge, which from other sources, including his own reports, we know to exert a more sensible action on the severity and the duration of the disease than any other single medicine.

This is a brief summary of some of the views which, in reading the work before us, appeared to be most interesting from their novelty or their inherent soundness. Our readers will not, we are sure, fail to discover many things in it which our limits oblige us to leave unnoticed; and we are equally sure that in its general tone they will find much to increase their respect for its author, and for the profession which he so worthily represents. A. S.

BIBLIOGRAPHICAL NOTICES.

ART. XIV.—*Transactions of Medical Societies.*

1. *Proceedings of the Sixty-Third Annual Convention of the Connecticut Medical Society, May*, 1855. 8vo. pp. 87.

2. *Transactions of the Medical Association of Southern Central New York, at the Ninth Annual Meeting, held at Elmira, June* 5, 1855. 8vo. pp. 124.

3. *The Transactions of the Belmont (Ohio) Medical Society, for* 1854–5. 12mo. pp. 172.

4. *Proceedings of the Annual Meeting, Nov.*, 1853, *of the Medical Association of Texas.* 8vo. pp. 30.

1. The *Proceedings of the Connecticut Medical Society* comprise a very able report on the topography and hygiene of Hartford County, by Dr. G. W. Russell, with a mortuary record, for eight years, ending December 31, 1854, by Dr. M. W. Wilson.

We learn from this report, that while the town of Hartford is, in general, remarkably healthy, and may be regarded as exempt from any prevailing special diseases, it was visited, during the months of August and September, 1854, with the Asiatic cholera, which prevailed to an extent by no means great, but beyond what might have been expected in a place the hygienic conditions of which are, upon the whole, so particularly favourable. Unfortunately, however, Hartford, like all other cities, has its plague spots; localities overcrowded by a population having little regard for personal and domestic cleanliness. To these localities, we are informed, almost every case of cholera that occurred during the summer of 1854 was confined. They are occupied principally by Irish emigrants. And it is a curious fact, that of all the deaths which were caused by the disease, amounting, perhaps, to eighty or ninety, or, as some think, to even more, only two or three happened in persons born in this country.

Dr. Russell remarks, that while cases of fever, dysentery, or other epidemic, endemic, or contagious diseases, have not been unfrequent in Hartford, it cannot be said that, at any time within many years, there has been an epidemic of extensive character.

"In the winter of 1848–49, erysipelas prevailed to some extent, and though of a low type, was not very fatal. In the summer and autumn of 1849, dysentery and diarrhœa were quite common, and there were many deaths. The disease was also of a low type, as has been the case whenever any epidemic has extensively prevailed. From 1840 to 1843, scarlatina was prevalent. Measles were very common about four years since, but were not very fatal. Smallpox has prevailed, at several different periods, within a few years. Typhus, or the ship fever, has occurred in many instances, almost invariably among recent immigrants, and, in more than one instance, is known to have attacked the same individual more than once within a few months.

"Without possessing any positive data upon the subject, it has been thought that diseases of the nervous system have been on the increase for the last twenty years. We all know how uncertain are mere opinions formed from impressions made from time to time; but the opinions of many minds upon the same subject, after many years' observation, are very apt to be correct. The causes operating to produce some of them are obvious enough; a greater luxuriousness in the modes of living; probably less exercise among the females; and increased activity of the mind from political and other excitements; a constant stream of literature of all kinds, with which the town is flooded; highly heated and poorly ventilated apartments, inducing languor and debility—these are enough to account for an increase in this class of diseases."

The report of Drs. Russell and Wilson is succeeded by neat biographical notices of Dr. Johnson C. Hatch, of Kent, who was accidently drowned, August 24, 1854, in the sixty-second year of his age, and after a professional career of thirty-four years; and of Dr. George Sumner, of Hartford, who died February 20, 1855, in the sixty-second year of his age, during thirty-four of which he was actively engaged as a practitioner.

These *Transactions* comprise but one other paper—"On Registration as the Basis of Sanitary Reform," by Stephen B. Hubbard, M.D., of New Haven.

The importance of a careful registration of the births, marriages, and deaths, which take place in each community, as an additional protection for the civil rights of the citizen, and as affording the only materials by which a correct estimate can be formed of the sanitary wants of the people—the remedies demanded for the amelioration of their condition—the improvement of the general health of the community—the promotion of the security of life, and the prolongation of its duration in usefulness and comfort—are examined and ably enforced.

We trust that the period is not far distant when provision will be made by law in every State in the Union, for an accurate and regular registration of births, marriages, and deaths; so that the certain means may be afforded of identifying the relations, and the more prominent facts concerning the personal history of every person who is born, marries, or dies, in each community, and, at the same time, of determining how far health, life, and longevity, are influenced by age, sex, condition, and occupation; by climate, season, and place of residence; and the comparative prevalence of different diseases, at the several periods of life in the two sexes, under the varied conditions and occupations of the population, and in different localities, whether contiguous or remote.

"We are becoming," remarks Dr. Hubbard, and the remark will equally apply to other portions of the United States as to Connecticut: "We are becoming largely a manufacturing people, and take pains to ascertain the exact cost of every article made in all its different parts, and its cost of transportation, yet we know nothing of the cost of life involved in its production.

"We know not, yet we ought to know, what is the difference in the value of life in our cities and country districts, at the seaside and in the mountains, among different occupations and classes of persons; and in what particular localities certain diseases, as consumption, scrofula, dysentery, and typhus fever, are most frequent.

"Registration affords the only means of determining these questions, and the materials for a complete history of the epidemics of the State can be procured in no other way. We have seen the great advantages and necessity of such a system, in proving individual identity, in securing the rights of property by inheritance, and in protecting public health and public rights. It will enable us to deduce the laws of mortality and population which are peculiar to ourselves; while it will afford us the means to devise new measures for the prevention of unnecessary sickness and premature decay.

"It is to be expected that any registration law sufficiently stringent to be of service will encounter objections and opposition; obstacles of this kind attend the inauguration of every new measure, however humane and useful its provisions may be. We should not be surprised then to hear, as we do, 'that this measure interferes with *private* matters.' 'If a child is born, if a marriage takes place, or a person dies in my house,' says one, 'what business is it to the public? These are private matters.'

"The individual who reasons thus has but a limited conception of the obligations he owes to himself and to the public. He cannot, if he would, cut himself entirely loose from every other person, but has, while living in families and communities, a direct or indirect interest in each of them. 'Every birth, marriage, or death, which takes place, has an influence somewhere—perhaps not upon you or me now, but it has upon others, and may, hereafter, have upon us.' Says a recent writer on this subject: 'In the great and frequent changes in the affairs of life, it is impossible to predict which shall prosper—this or that, whether I shall be a pauper, or have to contribute to support my neighbour as a pauper. Whether I shall inherit his property, or he mine. And every person should not only be willing but desirous to place within the reach of every other, the fact that he has existed, and the means of identification.'

"Parents should not fail to do this for their children, and, in all cases, should see that their births are properly recorded; interests of great moment frequently depend on it, and it is not of more consequence that the boundaries of their real estate be duly recorded than that the time, place, and circumstances of their children's births be verified beyond question.

"It has been shown that a well-organized system of registration is among the first wants of every enlightened people, and is capable of contributing largely to the amelioration of the physical and moral condition of communities. But, in order to do this, it must receive the hearty support and co-operation of all educated men, of whatever calling in society, who give tone to public sentiment. It appeals to them as being in some degree responsible for the success or failure of this very desirable reform movement."

"To the physicians of the State, however, it appeals *by right*, for the aid and countenance which no others can give; and it relies for its efficiency and usefulness on them more than on all the community besides—and without their co-operation it must fail."

"Who can better appreciate the advantages of registration, or more successfully advocate its claims upon public support, than those to whom the community commits the care of its health, and whom it will hold responsible for any neglect of, or indifference to, its sanitary interests. Let the medical profession, then, not hold itself aloof from a public measure so much for the amelioration of our physical condition, and the promotion of our best interests and happiness.

"Physicians are accustomed to think that, as a class, they perform a larger amount of unpaid labour than all others combined. I admit that it is so, and it is one of the brightest honours of our profession, that we are 'instant in season, and out of season,' in relieving the sick and suffering, and in helping forward every good work.

"It is possible, perhaps, that in the minds of some there still lingers a prejudice against the whole subject of vital statistics; and, perhaps, a few may seek to excuse themselves from their duty of making regular and prompt returns as required by law, by saying that the government cannot rightfully demand of one class, or of individuals, a service to the public without compensation. After diligent inquiry, I am happy to state that the number of *regular physicians* who make this objection, and openly avow it, is exceedingly small. These surely forget the numerous instances in which individuals are required to make sacrifices of time and labour for public good—to promote the ends of justice, and contribute to the public defence. In England, registration has become the great idea of the age, and the profession there has cheerfully contributed to its success by an immense amount of unpaid labour; thereby erecting for itself an imperishable monument, and furnishing to their brethren everywhere, an example worthy of imitation. In Massachusetts, the profession is actively alive to its importance, and united in effort to provide for that State the benefits of a general sanitary reform."

We would call attention to the very excellent circular, addressed by the Hartford County Medical Society to the physicians residing within its bounds, with the view of collecting materials for a sanitary report of the county. The inquiries attached to the circular are suggestive of the form and materials of a report, which, if drawn up in accordance with those inquiries, cannot fail to be particularly interesting and valuable.

2. The *Transactions* of the last session of the *Medical Association of Southern Central New York*, open with the usual address of the President, Dr. S. H. French.

After a few introductory remarks on the importance and dignity of the medical profession—pertinent and well expressed—Dr. F. takes up and discusses at some length, the subject of ovarian disease; the pathology of which is briefly but ably sketched. In considering the treatment of the several forms of ovarian tumours, the propriety of the operation of gastrotomy, with a view to their removal, is very fully considered; and reasons are adduced "why we should be extremely cautious, and well weigh the probabilities as regards the result, before deciding upon an operation."

These reasons are, first, the difficulty of determining positively the nature of the tumour. "Mistakes," Dr. F. remarks, "have been made by the very best surgeons, and that not very infrequently either; *deplorable* mistakes, too, which have put in jeopardy the lives of many females. There are tumours of the uterus or its appendages, which no sane man would attempt to remove, and which it is utterly impossible to distinguish from ovarian by any known rules of diagnosis. Several operations have also been commenced, when, upon laying open the abdomen, *no tumour could be found.* Other cases have been abandoned after the section, in consequence of adhesions, or the size of the pedicle, which were of so formidable a character as to preclude the possibility of breaking them up, or tying the pedicle and saving the patient.

"Another argument against the operation consists in the danger of the operation itself. Upon looking over the list of published cases, we find that the patient is liable to be destroyed by hemorrhage, peritoneal inflammation, and implication of the intestines, and the shock to the nervous system. Extreme suffering from pain and protracted convalescence are not necessarily fatal of themselves, but so act upon the system as to increase the danger, and not unfrequently help to make up, with other causes, a fatal result. Although Dr. Atlee has recently given an opinion which conflicts with this, still, on the other hand, we have a host of facts which all show but too clearly the truth of this position. But, it may be asked by the advocates of ovariotomy, if all these dangers exist, why is it that so many recover from the operation? Statistics, say they, show that this compares favourably with other capital operations in surgery. In answer to this, it might be said, and it has been before proven, that tables are but bad representations of actual facts. Surgeons are sometimes reluctant to bring their unfavourable cases to light. Tables are also made up too hastily, too soon after the operation, and thereby cutting off the final result. But admitting the tables are correct, and that but one in two or three die from the operation, there are other reasons still for opposing the operation. Other capital operations, it is true, show as great mortality following them as this, but still, the difference between the one operation and the other is this: The one saves three out of seven patients who could not by possibility survive even a few days were the operation postponed, while the other sacrifices *one unnecessarily* to prolong for a few months or years the lives of two, who would, in all probability, have lived as long had no operation been performed. In the case of hernia, or amputation, the patient must die if let alone; in the case of ovarian disease, life is put in jeopardy in the attempt to merely relieve the patient of an inconvenience, or an unsightly enlargement of the abdomen. In the one case, the surgeon is prompted by the highest principles of humanity to save the life of an afflicted fellow being, and his sense of moral duty urges him on, while in the other case, it is to be feared that, at least in some instances, the renown of being the hero of a great and hazardous operation may possible have some influence in prompting its performance.

"The nature and course of the disease, it may also be said, do not warrant so terrible a remedy. In a vast majority of cases it is quite clear that the patient's life is not shortened by the disease. It has been declared by no less authority than Wm. Hunter, that 'that patient suffering from ovarian disease will stand the best chance of living longest who does the least to get rid of it.' The disease is often very slow in its progress, gives the patient but little inconvenience, and not unfrequently other disease, entirely foreign from this, may be the one which destroys the patient. It may also, and occasionally does, terminate spontaneously. Medicines, likewise, at times, have a very powerful controlling influence over it, and, lastly, even should the patient recover from the effects of the operation, the disease may be of a malignant character, which will pursue its own course, entirely uninfluenced."

There is nothing new in the foregoing objections; most of them, as Dr. F. remarks, have been repeatedly urged by European surgeons, even by some who have themselves operated. It is important, however, that they should be kept prominently before the profession, to warn the young surgeon from being led into the performance of an unwarrantable operation from mistaken views as to its necessity and favourable results. In this country there are a few only, we believe, who still advocate it.

Appended to the addresses of Dr. F. are the histories of seven cases of ovarian disease, as illustrative of the effects of remedial treatment in controlling the march of the disease. They are both interesting and instructive.

The next paper is a very sensible one on the propriety of the use of alcoholic stimulants as a remedy in certain forms of diseases, by Dr. L. H. Allen.

The author looks upon alcoholic stimulants as an essential remedy in all cases of extreme exhaustion—where little or no nourishment can be introduced into the system, and where the nervous energy is exhausted almost to its utmost limit. On this point we believe there is very little difference of opinion among physicians. It is true that here and there we meet with an estimable member of the profession, who, looking to the vast amount of the moral and physical suffering existing in the community that has its immediate source in the abuse of intoxicating drinks, would, in his honest zeal to stay this wide spread, and, we fear, increasing evil, proscribe even from the lists of the materia medica all alcoholic stimulants. Nevertheless, by the great body of the intelligent members of the profession, it is admitted that there are certain stages and conditions of disease in which the most certain, if not the only means by which the life of the patient can be preserved, is the judicious employment of these stimulants. That as a remedy they have been misemployed, and grievously abused even in the cases which demand their use, is admitted on all hands. But this neither proves that they do not constitute a valuable therapeutic agent, nor that they may be stricken from our lists of the materia medica, without serious inconvenience.

As to the necessity of alcoholic stimulants in the treatment of a number of diseases, the profession generally, then, will be found in agreement with Dr. Allen. How far they will be willing to admit as valid his explanation of their *modus operandi*, in the cases in which they are called for, is not quite so certain. He supposes that their peculiar adaptedness to cases attended with extreme exhaustion is attributable not merely to their action upon the nervous system, as a diffusible stimulant, but also to the large quantity of carbon they contain, in such combination as to admit of its being taken up and carried into the circulation without having to undergo any change through the action of the digestive organs, whereby an indispensable article in the animal economy is furnished for the consumption of oxygen, taken in by the respiratory organ.

"Thus," he remarks, "the nervous system is roused up, respiration is performed more effectively, and consequently the blood becomes more stimulating to the brain, and the brain reflects its increased powers to the whole organism. The stomach, partaking of this innervation, is enabled to receive and dispose of a minute quantity of nutriment. The ability of the patient to receive sustenance is the first advance towards recovery. Hitherto nothing has been done except the *gaining of time* for the introduction of aliment, for neither quinine nor the diffusible stimulants, nor both combined, can build up or supply the waste of the system in a case like that under consideration. They may rouse up and give to the powers of life momentary strength to perform the work of assimilation, but should the favourable moment escape the observation of the attendant, the time gained will be of little importance."

To say the least of Dr. Allen's hypothesis, it is plausible and very cleverly sustained.

A paper follows, on chemical pathology, by Dr. John G. Orton. Its object is to point out the necessity of an accurate knowledge of organic and vital chemistry, in our investigation of the physiology and pathology of the several organs of the human system, and of the *modus operandi* of remedial agents; but more especially the importance of a study of the chemical pathology of the urinary secretion as a means of arriving at important indications in very many of the abnormal conditions of organs other than the kidneys, or of derangements of the general system, resulting in the establishment of a diathesis.

The author does little more than enunciate the subject. He has not even attempted to examine it in its several bearings, or to illustrate it by tracing its application to the pathological study of any particular disease or class of diseases.

We are next presented with the report of the committee on epidemics, endemics, and pathology, for the County of Broome, by Dr. Geo. Burr.

After the very pleasing statement of the almost entire exemption of the whole county from the prevalence of any serious disease, whether epidemic, endemic, or sporadic, as an apology for having nothing to present under either of these heads; the reporter, taking a hint from a few cases of croup that presented themselves, submits, as his pathological contribution, a few observations on that disease.

These observations, though very brief and general in their character, and suggestive of nothing new in relation to the pathology of croup, are not without merit. By directing attention to the importance of an early and accurate diagnosis of the several anginose affections in children, the physician is called upon to treat, they cannot fail to do good.

A very brief report on the epidemics and endemics of Chemung County, is presented by Dr. W. Woodward. The same favourable statement as that made in relation to Broome County is repeated in respect to this—the almost exemption of the county from serious disease. The only epidemic observed was one of scarlatina, generally of a mild character. Intermittents, it is true, were of greater frequency than usual—they were, however, neither severe nor obstinate; few cases requiring more than ten grains of quinine, with some alterative, to effect a cure. The only other endemic mentioned by the reporter is bronchocele. Of this he treated four cases during the year, with Lugol's iodine solution. Two of them may be considered as cured; the other two were relieved, one of them being still under treatment.

The report on vital statistics, which follows, is made up of an exposition of the causes which have prevented the committee from fulfilling the duty assigned to them, and with the view of securing, hereafter, the materials necessary for the preparation of a satisfactory report on the causes of death, the probabilities of life, the laws of increase or decrease of population; the mortality of epidemics, endemics, or disease in any form; the influence of season, or changes of weather as recorded by the meteorologist in the production of disease, and the healthy or unhealthy condition of a State, county, town, or hamlet, the committee, through their chairman, J. G. Orton, offer for the consideration of the society, a series of resolutions, which, as the measures embraced in them are, in our opinion, worthy the attention of our medical societies generally, we here annex.

"That, while we would urge it as a duty devolving upon the State government to secure the registration of births, marriages and deaths, as being of paramount importance, not only to its best interests, but in promoting those of civil society, and the happiness of mankind at large, we would also consider well our own duties and opportunities for aiding in the furtherance of this object, by taking measures to obtain correct and special information in regard to that portion of vital statistics of more immediate interest to the medical profession, and more properly belonging to their supervision, namely, the *causes* of death, the prevalence of *epidemics* or *diseases* of any kind, the *relative mortality* of synonymous diseases, in the different counties embraced by this Association, and finally, the *influence of occupation, condition, age, sex, season*, etc., in the production and modification of disease.

"That this Association, in view of the vast amount of valuable statistical information which might accrue to the medical profession from the uniform registration of such observations, and believing that a great *desideratum* in medical science might thereby be attained, would respectfully and earnestly recommend to its members their hearty co-operation for the accomplishment of this desirable object.

"That it shall be the duty of each member of this Association to keep a faithful record of diseases which may fall under his observation during each month, according to the classification which may be adopted by the Association, stating the age, sex, and occupation of the patient, the average duration of each disease, and finally the result, whether in recovery or death, and to report the same, in writing, to the committee appointed for its reception, on or before the first day of April of each year.

"That committees of one from each county represented in this Association, shall annually be appointed by the President, whose duty it shall be to receive and arrange a digest of the reports transmitted to him, from the members residing within their respective counties, and report the same at the annual meeting of this Association.

"That a committee of three be immediately appointed by the President, who shall specify the diseases which shall be included in the annual returns, arrange a uniform system of registration for the use of the Association, and report the result of their conference at as early an hour as practicable during the present session."

The three next reports, from Cortland, Chemung, and Tioga Counties, are on obstetrics. They are drawn up, the first by Dr. F. Hyde, the second by Dr. N. R. Derby, and the third by Dr. L. H. Allen. These reports comprise many highly interesting facts. The report from Courtland County is made up of remarks on rupture of the uterus and its treatment, with three cases in illustration. Dr. Hyde is an advocate for the early resort to the Cæsarian operation whenever this accident occurs, and we believe that in so doing we shall afford a far better chance of life to both mother and child, than by an attempt to deliver by the hand or by instruments per vaginam. There may occur instances in which, from the favourable position of the fœtus, and the condition of the mother, delivery may be easily effected without the section of the abdomen and uterus, and yet, as a general rule, judging from the statistics of these accidents that have heretofore been presented, we are rather inclined to the opinion that the preferable plan will be a prompt resort to the Cæsarian operation in nearly every case of rupture of the uterus occurring during pregnancy.

In these reports a number of interesing and instructive cases are detailed, illustrative of various particulars in obstetric practice.

In regard to the employment of ergot, Dr. Squire, of Chemung County, remarks, that when given to increase the force of pains already occurring at intervals, he has almost always found it to answer very effectually the end in view; but when given to originate pains, he has often known it to fail in producing the desired effect, which corresponds with our own experience. Dr. S. considers the ergot a useful remedy to expedite tedious labour, and he uses it frequently to hasten the expulsion of the placenta.

Dr. Chubbuck, of the same county, has employed ergot in a few cases, in some with advantage. He recollects two cases where it caused severe pain in the head, but did not increase in the least the uterine contraction. He confines the use of the article to the period when the head is within the bony pelvis, and to cases where there is not sufficient contractive effort to expel the child. He thinks it should be used with caution, and that under its use there is great danger to the fœtus, unless this be speedily expelled.

Dr. Derby says: "Of the beneficial effects of ergot I can speak with much positiveness. So far as my memory serves me, I have never given it where it has failed to produce the effects desired. Administered during labour, when there is no disproportion between the head and pelvic cavity; when there is no great rigidity of the soft parts; when there is no mal-position; but the cause of delay is a torpid state of uterine action, I have never had it fail of producing the requisite amount of expulsive pain, and bringing the labour to a favourable termination. I use generally the wine of ergot, as being, when recently prepared, full as sure in effect, and far more pleasant to administer, than the infusion."

In regard to the therapeutic application of opium in midwifery, Dr. Squire regards as of great service in certain cases, the nature of which, however, he does not specify.

Dr. Chubbuck has not been much in the habit of employing opium in his obstetrical cases; he thinks that by some practitioners it has been used much too freely.

Dr. Derby, in cases of much irritability of the system, resulting from lingering labour, has employed opium, given so as to obtain its full sedative effect, with much benefit. Further than this he knows but little of its use in obstetrical practice.

Dr. Squire is fond of the use of tartarized antimony for its sedative influence and its relaxing effects upon the system. He has used it frequently in cases of rigid os uteri. Dr. Chubbuck has seen it used in a few instances, with distressing results, in consequence of the incessant vomiting produced by it. Dr. Derby has much confidence in the article in cases of rigid os uteri.

Dr. Squire is of opinion that anæsthetics are unnecessary in all ordinary cases of labour. Dr. Chubbuck thinks they should be used with great caution. In regard to them, Dr. Derby speaks as follows:—

"I can say nothing of the effects of chloroform in midwifery from my own experience, having never used it; but, judging of its value from the results of its use in the hands of others, I should be unwilling to venture upon its administration. Dr. Robert Lee makes mention of seventeen cases in which the article was inhaled during labour; in all of which injurious effects followed. In two cases uterine contractions were arrested; in seven, insanity and great disturbance of brain followed; in five, it became necessary to use the forceps; in four, dangerous or fatal peritonitis followed; in one, epilepsy, and in one, dangerous syncope. His conviction is that chloroform should be expelled altogether from the practice of midwifery. He says: 'There are no circumstances in which it can be with utility, none in which it can be with safety employed.' Dr. S. W. J. Merriman, after enumerating a number of unfortunate cases, adds, 'The more I hear and see of the use of chloroform in midwifery, the more I am convinced that, though it may occasionally be useful and desirable, in the small quantities now used in London, in bringing about a relaxation of the rigid os uteri, its administration in ordinary cases is not desirable.'

"While relaxation of the rigid os uteri can be obtained with as much certainty and safety by the administration of antimony, I should hardly have recourse to chloroform."

Drs. Squire and Derby have never met with a case of placenta prævia, and Dr. Chubbuck, during a practice of twenty-four years, has had but two cases. In one excessive hemorrhage had taken place before his arrival. Delivery was effected in about twenty minutes by separating the placenta on one side, rupturing the membranes, and the use of ergot. No hemorrhage occurred after the doctor's arrival, nevertheless, the patient died within fifteen minutes after delivery, from exhaustion. The other case was in a young woman about eight months pregnant with her first child. The placenta was separated on one side, the membranes ruptured, and the child turned, and delivered by the feet. The patient recovered and did well, and in ten months afterwards was safely delivered of twins.

Dr. Squire has met with only one case of puerperal convulsions. A convulsion was the first indication of impending labour. Many other convulsive attacks occurred before delivery was completed. It was a case of twins. The presentation of the first child was that of an arm and the umbilical cord. Delivery was effected by turning. The child was stillborn. The presentation of the second child was of an arm. Turning was also resorted to; the child likewise stillborn. The convulsions were treated by bloodletting and antimony. The mother was comatose for two days subsequent to delivery, but ultimately recovered entirely.

Dr. Chubbuck has met with seven cases of puerperal convulsions. They were treated by bloodletting, tartarized antimony, and opium. Two of the cases proved fatal—the other five recovered.

Dr. Allen, of Tioga County, relates one case of puerperal convulsions that fell under his notice, some years ago, in consultation. The patient was near the full term of gestation. The convulsions preceded labour pains, and left the patient in an unconscious state. She had been bled, and resort had been had to opiates, chloroform, and laxatives, before Dr. A. was called in. Labour pains came on, and in the course of twenty-four hours the patient was delivered of a healthy child. At the end of another twenty-four hours she was partially restored to consciousness, and, from this time, we are led to infer that the patient promptly recovered.

The succeeding reports, four in number, are on surgery. They are from Cortland, Broome, Tioga, and Tompkins counties, and drawn up, respectively, by Drs. Chas. H. Swain, J. G. Orton, H. N. Eastman, and E. C. Moe. These reports are replete with valuable and instructive cases in all the leading departments of surgical practice, many of them accompanied with pertinent remarks of a highly practical and suggestive character. We would indicate as especially interesting the case of fracture of the tibia, with disruption of the connection of the fibula with the astragalus, reported by Dr. Swain. The accident occurred on the 21st of January, 1855, in a man, 60 years of age, and weighing 212 pounds, by his being thrown out of a sleigh. He was able to leave his bed, permanently, about the middle of March, and to go out on the first day of April. The limb of the normal length and figure.

Another equally interesting case is one of dislocation of the femur, downwards and forwards, into the thyroid foramen, occurring in a little girl eight years old, in consequence of a fall upon a carpeted floor, while jumping the rope. The dislocation had existed for five days, before the nature of the accident was suspected by the parents. Thirty-three days after the occurrence of the dislocation, and twenty-seven after its reduction, indications of an abscess forming near the great trochanter were observed; four days subsequently, the abscess opened spontaneously, and discharged healthy pus in considerable quantity. It was deep-seated, and fears were entertained for the consequences, but they were not realized; the abscess healed in the course of a week. The patient commenced walking upon crutches about the first of September (date of the accident, Jan'y 18), and gradually, for three weeks, brought the limb into exercise, when the crutches were laid aside. There was a little halt in the gait for a time, but now, says Dr. Eastman, by whom the case is reported, "I think no one could determine, by the *gait*, or by *examination*, which had been the dislocated member."

"Dislocations of this kind, in children," he adds, "I believe are very rare. In the present case, some of the symptoms appeared anomalous, compared with the reported cases in my possession, which are all of adults. For instance, the non-appearance of any perceptible tumour in the groin, notwithstanding the very spare habit of the body, and, also, the ability to use the limb sufficiently to walk about the room."

We present in full the following history of a case of compound, comminuted fracture of the leg, reported by Dr. J. G. Orton, of Broome County:—

"I was called, Dec. 6, 1854, to attend Mr. S. B. Fairchild, aged 50 years, residing on the Choconut Creek, near Binghampton. The patient being engaged in his saw-mill, removing ice from the water-wheel, the latter suddenly commenced its revolutions, and entrapped his leg in the limited and unyielding space of one and one-fourth inch, which was a sufficient wedge to arrest the further movements of the wheel, although the buckets above contained several barrels of water. Assistance having been obtained, the wheel was reversed, and the limb extricated. On examining the mangled extremity, it was apparent that the accident had resulted in a compound and comminuted fracture of the tibia and fibula. An oblique fracture of the tibia, high in its upper third, a transverse one about the centre of its middle third, and still another oblique fracture at the upper part of its lower third. The portion of bone included between the upper and middle fracture was literally crushed, and divided into many pieces, by transverse, oblique, and longitudinal sections. The fibula was fractured only at its middle third.

"The external wound was not as extensive as the circumstances of the accident would have led us to suspect, but the internal laceration of muscles and vessels was much more grave in its character. Considerable venous blood had been lost prior to my visit, and the hemorrhage continued for some time after my arrival, before it could be effectually arrested. Subcutaneous infiltration manifested itself throughout the larger portion of the limb.

"Notwithstanding the accident was of such a magnitude as would, under ordinary circumstances, justify a resort to amputation, I considered it my duty, in consequence of the peculiarly propitious condition of my patient, namely: a perfectly healthy constitution, and a favourable season of the year, to give him the chance, however poor it might appear, to preserve the limb. I accordingly made an effort, by careful manipulation, to bring into coaptation the numerous fragments of bone, and I had the pleasure of succeeding much better than I could reasonably have expected. Having applied, *lightly*, a bandage from the toes to the knee, and graduated compresses on the anterior interosseous fossa, and on each side of the tendo-Achillis, and behind the malleoli, I secured the adjustment of the bones by the application of the improved gutta percha splints of Dr. Benjamin Welch, of Salisbury, Conn., which seem to me to be a great desideratum in the treatment of fractures, especially of such as the one under consideration. The limb having been thus secured, was placed in the very convenient fracture apparatus of Dr. Welch, and cold water freely applied. I confined it to the straight position, according to Mr. Fergusson's plan, in consequence of one of the fractures being high up in the upper third of the tibia; a relaxation of the extensor muscles in such cases must be secured, in order to avoid a tendency in the short bone, at the head of the tibia, to rise above its place for coaptation.

"*First Dressing*, Dec. 8.—Found the inflammation and swelling much reduced, scarcely any constitutional disturbance could be seen, as affecting the patient. Ordered a continuance of water applications.

"*Second Dressing*, Dec. 11.—Tumefaction still less, both limb and patient look well.

"*Third Dressing*, Dec. 15.—Patient feels quite comfortable, no constitutional disturbance, limb appears in a healthy condition, the external wounds are attempting to unite by first intention.

"I continued to visit my patient every few days from this date until the first of February. The extensive contusion which the soft parts had received internally, caused considerable sloughing, and the fistulous openings, which were numerous, burrowing to the comminuted portion of the fracture, rendering it necessary that the limb should be frequently dressed. Although I confidently expected that many spiculæ of bone would be thrown off and present themselves at the *significant* openings, yet I was very agreeably disappointed. It is my opinion, however, that a slow process of disintegration took place in some of the bony fragments, and that they escaped in the matter which was constantly emitted through the fistulous openings. The straight position of the limb was maintained for eight weeks, and afterwards it was gradually flexed. I considered the long continuance of this position necessary, in consequence of the slow process of union manifested in the bony structure. Up to the present time, the leg has gradually continued to improve, and now it is quite firm, and capable of supporting considerable weight, although the patient uses crutches in consequence of persistent lameness of the ankle, dependent, doubtless, on a former injury of that part, and, also, on a more recent accident which befell the same. But the point of greatest interest in this case would seem to be in the somewhat extraordinary result as to shortening. Measured carefully according to the plan of Dr. Frank H. Hamilton, from three different points, only three-eighths of an inch shortening could be made out, which, taking into consideration the magnitude of the accident, is certainly somewhat remarkable. To what this happy result is due, is more than I can divine; for I used no more than ordinary, careful exertions and measures during the treatment. The prospect is now fair that it will ultimately become a sound and valuable limb."

In the report from Cortland County, a number of cases of operation for hernia are given, appended to which are some remarks, which, though not of a very novel character, enforce practical views of no little importance, and which cannot be too often pressed upon the attention of physicians.

To the reports succeed the histories of a number of cases, most of them of a deeply interesting character.

The first of these cases is one of compound, comminuted fracture of the tibia and fibula of the right leg, extending into the ankle-joint, simple oblique fracture of the tibia of the opposite limb, midway between the knee and ankle, with contusion of the left arm and rupture of the radial artery; followed, during the eighth week of recovery, by erysipelatous inflammation of the wounded leg, resulting in ultimate recovery.

The relator of this case, Dr. Nelson Nivison, very properly remarks: "This case is instructive from the fact that it demonstrates the propriety of attempting to save a mangled and shattered limb, and the success that may attend our efforts, even in cases of apparently an unpromising character. It shows also the importance of assiduous and correct after-treatment.

"It matters little," remarks Dr. N., "with how much accuracy and skill a surgeon may adjust the fragments of broken bones, or however perfect and well adapted his apparatus may be, a multitude of untoward events are liable constantly to occur, against which no human foresight can possibly provide. Any one of these accidents, apparently trifling at first, may, if not quickly averted, become a source of disturbance to an extent sufficient to destroy the harmony of the vital actions, and thus give rise to serious complications in the form of local inflammation, etc., or a slight displacement of the broken surfaces, perhaps in consequence of the wilfulness and obstinacy of the patient, which, if not speedily remedied, may result in permanent and embarrassing deformity. We have no safety, therefore, except such as results from keeping the patient constantly under our own inspection and control, until a firm bony union is perfectly established."

The case also illustrates the therapeutic value of quinine and opium in traumatic erysipelas.

The other eight cases, four of which are surgical, and one obstetrical, namely, rupture of the recto-vagina septum during labour, with the passage of the fœtus and placenta through the rent and their protrusion at the anus, occurring in the practice of Dr. J. H. Cole, of Well's Township, Bradford County, Pa. The reporter, Dr. Wey, refers to a somewhat similar case related by M. Jules Cloquet, in the *Medical Gazette*, of Paris, for May, 1855.

The three remaining cases are medical, namely: one of acute rheumatism, treated with lemon-juice, by Dr. C. Green; one of oxalic diathesis, by Dr. J. G. Orton; and one of subacute pleurisy, by Dr. H. S. West.

3. The *Belmont Medical Society*, judging from the volume of *Transactions* before us, have a very just estimate of the importance and dignity of the profession of medicine, and of the necessity of co-operation and organization among its members for mutual improvement, and the maintenance of that correct ethical deportment in their intercourse with each other, with their patients, and with the community at large, without which neither union of action among themselves nor the respect of the public can be secured.

In the very neat address delivered by the President, Dr. J. T. Updegraff, on the occasion of his inauguration, the mutual claims of the community and the medical profession on each other are set forth with becoming earnestness and much eloquence.

The same subject, in some of its bearings, at least, is the theme also of the address delivered by the Vice-President of the Society, Dr. S. B. West. The sentiments expressed in both these addresses are correct, elevated, and, withal, capable of being carried out in all their extent in practice.

Another ethical paper contained in these *Transactions*, is the report by Dr. J. G. Affleck, on quackery. It is a spicy article. The writer deals with the enemy right honestly. Like a true knight, he asks no favours, and disdains, when his aim and object are, if possible, to destroy the many-headed monster, to coax his opponent by courtly and measured phrases, but calls him by his right name, and paints his doings and their results in their true but by no means attractive colours.

The writer touches, and with no sparing hand, upon one class of charlatans, of all the motley horde the most contemptible and criminal. We allude to the regularly educated physician, who, for the unholy love of gold, and contrary to his convictions of truth and honesty, deserts the ranks of the legitimate profession, and assumes the arts and practices of the veriest quack. He assumes, perchance, some speciality, some disease of frequent occurrence and of generally fatal tendency, as his especial province. With unblushing impudence he announces new discoveries made by him alone in relation to its pathology, and a certain plan for its cure, known only to himself; that all other views than his are founded in error, all other methods of treatment fallacious if not destructive. All who apply to him for advice manifest either the incipient or confirmed stage of his special disease. The press, that potent engine for good or for evil, he bribes into his service, and even procures the pen of more than one ready writer to trumpet forth his success, by a rational diagnosis, a deep insight into the nature and causes of disease, and a skilful application of new and appropriate remedial agents, in restoring those whom the leading physicians of our country had consigned to a lingering but certain death.

That such recreants to medical truth and professional honour, such dishonourable panderers to public ignorance and credulity, for the sake of gain, exist cannot be denied. It is to be regretted that the means upon which much of their success is founded must be beyond the reach of ridicule or reason, so long as "man loves to be deceived and cherisheth rather they who make of him a dupe than they who would open his mental vision to the truth."

The strictly professional communications commence with one entitled "a glance at the digestive organs, their normal and abnormal conditions and causes," by Dr. B. T. Cash. The writer has certainly kept his communication true to its title; it is truly a mere glance at the physiology and pathology of the digestive organs. He has presented a few truisms, almost universally recognized, but we can find nothing peculiarly striking or instructive either in his exposition or application of these.

The next paper is on vital harmony, by Dr. Mervin K. Wright. A very prettily written article, rather misty in parts, but, upon the whole, inculcating truths, which, though they have not the charm of novelty, are not, on that account, the less important.

Observations on the nature and prevention of phthisis pulmonalis, by Dr. J. G. Affleck, is the next paper. A most important subject, demanding the serious consideration of every physician; but we doubt whether the observations of Dr. Affleck are calculated to throw any important light upon either the nature or prevention of pulmonary phthisis.

Of the individual cases reported in this volume of *Transactions* are a series illustrative of the curative effects of urate of ammonia as it is found combined in human urine as a local application in acute rheumatism, detailed by Dr. Ephraim Gaston.

The application was made by combining human urine with clay.

In the first case, the disease affected every joint of both the upper and lower extremities, frequently a number of them at the same time; but it was usually worst in the knees, and particularly in the left one, which had, in consequence of the frequent attacks, become enlarged for the last three years, at least one-third beyond its natural size, and so much weakened that it was often impossible to walk on it.

The remedy was applied, at first, to the left knee and ankle only; the relief afforded was so palpable that, at the next visit, it was directed to be applied to the right knee and ankle also, and the effects produced were so striking that the patient was not willing to submit to the suffering she endured in her other joints, until the next visit of Dr. A., when she had the means of relief at her command; and, therefore, of her own accord, had the urate of ammonia applied to her hips, elbows, wrists, and hands, and the relief she experienced from its use on these parts was as prompt and surprising as it was in the knees and ankles.

"In this case, the patient had been twice copiously bled; had been twice thoroughly purged; had been kept in a free perspiration, with a compound of opium, calomel, and antimonial powder, for four days and nights, when ptyalism forbade the further use of the compound, after which the sweating was kept up for forty-eight hours, with a solution of tartar emetic and morphine; yet, notwithstanding all this medication, there was no mitigation of her sufferings till the poultice was applied. The joints on which it was used were relieved, while the others were still as bad as ever; but no sooner was it applied to these, than they began also to mend. It not only relieved the joints that had been recently attacked, but it also, in a week's time, reduced entirely the swelling which had been in the left knee for three years, and restored it to its normal size.

"The patient, in the second case, had had frequent attacks of the same kind in the same knee while he lived in Pennsylvania, which usually confined him for several weeks. And in March, 1852, a short time after his removal to this State, he had one, for which I treated him, and in spite of all 'my pliances and means to boot,' it confined him to his bed for two weeks, and to his room for another one. And he considered it a happy recovery, for he said that he had recovered much sooner that time than he had ever done before. So much superior did he think my treatment of his case this time to that he had been subjected to by his physicians in Pennsylvania, and so much confidence did it give him in my skill, that, when he was attacked this time, he chose to wait three days for my return from Wheeling, rather than risk employing another physician. So far as he or I was capable of judging, this attack was, in all respects, like the one for which I attended him in 1842, and equally as severe. I cured that one by the ordinary means of bleeding, purging, sweating, mercurials, opium, antimonials, and colchicum, and locally warm fomentations, poultices, and blistering, in three weeks; and this one by the aid of the urine and clay poultice, in four days.

"In the third case, there can be no controversy about the salutary effects of the urine and clay poultice, for in the treatment of it the patient took no medicine whatever, except a purgative dose of calomel and jalap, and two and a half tablespoonfuls of a solution of six grains of tartar emetic, and two grains of sulphate of morphia in a teacupful of water."

The report on "the improvement in medical science," by Dr. E. Gaston, is a very interesting one. Though the manifold improvements that have taken place within a very recent period in every department of the healing art, are indicated by the reporter from only a single point of view—the multiplication and improved character of the treatises to which they have given birth—the entire report is replete with instruction and highly creditable to its author.

Obituary notices of Dr. Joseph Hewetson, of Belmont County, Ohio, who died January 16th, 1855, in the 51st year of his age; and of Dr. Wm. N. Drake, of the same county, who died January 7th 1855, in the 31st year of his age, complete the contents of the present volume of *Transactions*.

4. The *Proceedings* of the last annual meeting of the *Medical Association of Texas*, contains, in addition to the minutes of the session, and the constitution and by-laws, only the anniversary address of the President, Dr. George Cupples, of San Antonio. It does not appear that any reports or communications of a professional character were presented at the meeting.

The address of Dr. Cupples is well written, manly, and appropriate. The sentiments he expresses in relation to the rights of the medical profession—the unrequited services rendered by it to mankind, and the legitimate influence it is called upon to exert on all questions relating to public hygiene, medical police, and medical education, competency, and ethics are perfectly sound, and uttered in a fearless, high-toned manner, indicative of a full conviction, on his part, of the rightfulness and importance of every position he advances and advocates.

After dispensing to the medical men of Texas, much wholesome advice as to the action expected of them in the improvement of professional knowledge, the defence of their own rights, and the enlightenment of the communities in whose midst they live, on all questions involving health and life: after administering a merited rebuke for the timidity exhibited by some of them, and the culpable indifference and selfishness of others, which has prevented the profession from exercising its legitimate influence for its own advantage, as subservient to that of the people at large, Dr. C. concludes his address as follows:—

"In our collective and individual capacity, we have reason to be proud of our noble profession. The history of every epidemic visitation, of every blighting pestilence, has been the history and the monument of the devotion, of the abnegation of self, of physicians throughout the world. When the cholera fiend, quitting his lair 'mid the swamps and jungles of the far Ganges, was extending his career of terror over the globe; when his path of desolation was marked from east to west by myriads of the dead; when the power of the mightiest monarchs, the resources of the most powerful nations, their *cordons sanitaires*, their quarantines, and their lazarettos, availed not to check his onward tread; when he stayed not his progress for the snows of Siberia, and he languished not under the scorching sun of the equator; when the dread of an evil as yet unknown, heightened the fear, and enhanced the terror with which men heard of his mysterious, capricious, but ever forward march; when the bands of society were loosed; when the marts of commerce, the haunts of pleasure, and the temples of our faith, were alike deserted; when, in truth, the pestilence walked in darkness, and the enemy came as a thief in the night—who then rushed to the breach? Who went forth to battle with the advancing foe? The physicians of Christendom! No banner waved for them save the winding sheet and pall, no martial trumpet poured forth its inspiring notes; the passing bell alone told of the combat, until consideration for the living caused the dead to be borne in silence to the tomb, and the voice of the mourners was heard not in the streets, for natural grief was lost in selfish apprehension. The triumphs of our profession were won in the pestilential wards of hospitals, and in the gloomy chambers of the poor, where no reward could stimulate to exertion, no trophy beckon on to fame. Too often, amid the execrations of the very people, to serve and to save whom they braved death in his darkest form, did they toil on until, worn out by exhaustion, they fell unresisting victims to the pestilence which, till then, had spared them. But no void remained in their ranks; others pressed forward to fill their places and to share in their fate, and as though the destroying angel had been touched by their devotion, fewer of our number fell before his dart than of any other class of the wasting population. If glory and patriotism have had their heroes, religion her martyrs, neither have heroes and martyrs been wanting among the sons of science. If the history of these has not yet been written, it is not because the materials are lacking."

D. F. C.

Art. XV.—*Reports of American Institutions for the Insane.*

1. *Of the Butler Hospital, for* 1854.
2. *Of the Bloomingdale Asylum, for* 1854.
3. *Of the New York State Lunatic Asylum, for* 1854.
4. *Of the New Jersey State Lunatic Hospital, for* 1854.
5. *Of the Pennsylvania Hospital for the Insane, for* 1854.
6. *Of the Pennsylvania State Lunatic Hospital, for* 1854.

1. The American reader who wishes to obtain a knowledge of insanity, its nature, its causes, and its proper treatment, without personal observation in a hospital, can hardly do better than procure a series of the Reports by Dr. Ray. We always shrink from them when preparing our notices, because of the labour required in the effort to do justice to both the author and our readers, and at the same time confine ourselves within justifiable limits.

	Men.	Women.	Total.
Patients in the *Butler Hospital*, Dec. 31, 1853	63	73	136
Admitted in course of the year	31	49	80
Whole number	94	122	216
Discharged, including deaths	40	45	85
Remaining, December 31, 1854	54	77	131
Of those discharged, there were cured			40
Died			19

The department for females has been so much crowded, that applicants for admission have been rejected.

Patients admitted from 1848 to 1854, both inclusive	663
Discharged, recovered	211
Died	121

The deaths are "equivalent to about fifteen per cent. of the *average resident number of patients*,[1] one year with another."

"In 1850, when dysentery was very prevalent in this region, we had our share of it, but this year we had only a few cases, none of them being severe, and not more than three continuing beyond the third day. With these two exceptions, and that of an occasional influenza, we have been entirely exempt from epidemic disease."

"It is a noteworthy fact that, in most, if not all our hospitals, the mortality has been steadily increasing of late years." We have made no investigations in regard to that which is here asserted.

"*Premature removals*" is still one burden of complaint in the reports from many of the institutions. "It is one of the disheartening experiences of our calling," says Dr. Ray, "to be so often obliged to see a patient removed just at the moment when it seemed as if our efforts to promote his recovery were about to be rewarded with success, though a longer perseverance would have been followed by no very obvious deprivations—none, certainly, which a year or two of restored health would not have fully repaired. Few things are more calculated to lower our estimate of human nature, than *this balancing of reason, God's greatest gift to man, with a paltry sum of money*. * * * Few of our patients who fail to recover within five or six months, are allowed to remain longer. It is concluded that everything has been done that we can do, and that the time has come for another experiment. And yet it appears, from one of Esquirol's tables, that in the French hospitals less than one-half of the recoveries occur within the first year. * * * I have no hesitation in saying that many of the incurables that form so large a share of the inmates of our hospitals, have been made so by the interference of well-meaning but injudicious friends."

From a very accurate exposition of the *secret*—if secret it may have been—in which lies the superior advantage of *hospital* over *domestic* treatment, we make an extract which will impart a sufficient idea of the whole:—

"Insanity implies the existence of bodily derangement, and therefore is a suitable object of medical treatment, which, of course, would be more skilfully applied by men who are devoting their whole time and attention to this affection, than by those who observe it only on a very limited scale. But it also implies derangement of the ideas, hallucinations of the senses, perversion of the moral sentiments—all which, though the result of physical disorder, are, so far as their outward manifestations are concerned, in some degree under the control of others, and by such control—in a way not very well understood—the morbid process may be arrested. Now, it is the moral management prevalent in the hospitals of our time, which so strongly distinguishes them from those of any former period, and determines, in a great measure, the amount of good which they accomplish. * * * It is one of their merits, indeed, that this management works so easily, and substitutes so quietly its own arrangements for the suggestions of disease, that the uninitiated observer finds it difficult to appreciate its real value, and thus often mistakes the character of its results. He sees the patient taking no medicine, perhaps; calm in his discourse and movements; readily complying with the wishes of others, and engaging, it may be, in some form of work or amusement, and he adopts the conclusion, which no opinion of the physician can shake, that the patient has recovered, or, at any rate, is so much better that he would do equally well at home, or in a private family. He can scarcely be made to believe that what he witnesses is chiefly the result of that special management peculiar to a modern hospital for the insane—of architectural arrangements which restrain without annoyance; of systematic regularity in the daily routine of life; of gentle manners, judicious firmness, vigilant, enlightened, and conscientious supervision. Now, these qualities are not a matter of accident, nor are they the growth of a day. They are the elaborated result of a profound study of the mental constitution, both in health and disease; of extensive inquiry into the various arts concerned in the erection and practical working of an extensive establishment, and of an organization of the service best calculated to effect its designed object."

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[1] We regard this as the only accurate basis upon which to compute the mortality in any public institution.

"The peculiar restlessness of the insane, which impels them to roam about regardless of time and occasion, at the risk of their own safety and the peace of society, and which finds no sufficient restriction in the arrangements of an ordinary dwelling, short of confinement in a small apartment, is effectually controlled in a hospital; while the range of ample galleries and airing-courts prevents that control from being oppressive and unhealthy. Their fitful humours, their wild caprices, their impulsive movements, their angry looks, are met by the steady and straightforward will of attendants who have learned to perform their duty unbiassed by fear or favour. Having no object of their own to serve, imbibing the spirit of kindness which prevails around them, deterred from improper practices by a vigilant supervision, and aided by suitable architectural contrivances, they are enabled to manage their charge with the least possible degree of annoyance. Thus withdrawn from outward excitements, and especially from the persons and scenes connected with his mental disorder, the patient naturally becomes calmer, his mind opens to better suggestions, and finally seeks for repose in amusement or labour. And thus it happens that in many cases but little more is necessary to conduct the morbid process to a successful issue, besides giving the constitution a fair chance to exert its restorative powers unembarrassed by adverse influences."

2. In the report of the Bloomingdale Asylum, Dr. Brown gives the following statistics:—

	Men.	Women.	Total.
Patients in the Asylum, January 1, 1854	56	68	124
Admitted in course of the year	58	64	122
Whole number	114	132	246
Discharged, including deaths	64	55	119
Remaining, December 31, 1854	50	77	127
Of those discharged, there were cured	22	26	48
Died	16	10	26

Causes of death.—Old age 6, exhaustive mania 4, phthisis pulmonalis 3, general paralysis 3, epilepsy 2, marasmus 2, apoplexy 1, disease of kidneys 1, suicide 1, use of opium 1, "exhaustion from a suicidal attempt previous to admission" 1.

Of the six who died from old age, the youngest was 70, and one had reached the age of 95, preserving a remarkable degree of intellectual activity and genial humour within a few days of his departure.

"The insane, as a class," remarks Dr. Brown, "are unsound alike in mind and body. They inherit the multiform varieties of scrofula, and among them abound the protean forms of nervous diseases, hysteria, chorea, neuralgia, and epilepsy. Some are victims to depraved appetites, unrestrained by an enlightened and vigorous will, and suffer the torments of alcoholic poison, which has paralyzed alike their physical energies and their moral sense. Cardiac, hepatic, renal, and uterine affections are common among them, excite and shape their delusions, and generally shorten their lives. Their sensations being enfeebled or perverted, they disregard extremes of heat and cold, and become indifferent to danger; but while the mind may betray no indication of pain, their bodies suffer like those of sane men. Neglect of hygienic laws, and resistance to the regimen or habits imposed by others for their benefit, beget inevitable evils. Obstinate derangements of the digestive and assimilative organs are induced by prolonged abstinence, or excessive and unmasticated food; the circulation is languid from muscular inactivity; the extremities are cold and livid; slight abrasions of the skin become alarming ulcers; and serious visceral disease insidiously establishes itself, too often successfully resisting medical art. These patients become prematurely old; their intellectual perceptions and moral emotions disappear with healthy sensation; they sicken and die, often without an intimation of suffering, or an expression of concern.

"On the other hand, a remarkable exemption from prevailing epidemics is sometimes vouchsafed to these unfortunates. Thus, while cholera prevailed to a considerable extent in the neighbourhood of the Asylum during the past summer (1853), no instance of this disease occurred within our inclosure, and the whole household was preserved, in an unusual degree, from all affections of a similar character."

The long-desired improvement in the buildings of this institution has at length been accomplished by the enlargement of the "lodges," and the introduction into them of a system of forced ventilation, and heating by hot water. The beneficial effects of these have soon become apparent. "Quiet and sensitive patients have been effectually relieved of the annoying presence of the disorderly and noisy, and at the same time the latter have been permitted a degree of liberty formerly incompatible with the comfort of their associates."

In the means for ministering to all the physical comforts of its patients, the Bloomingdale Asylum has now but few equals in this country.

3. Dr. N. D. Benedict resigned the office of superintendent of the New York State Lunatic Asylum in June, 1854, and was succeeded by Dr. John P. Gray, who for some years had been connected with the institution as assistant physician. The report of the latter contains a large amount of interesting matter, from which we shall extract that which appears to be of the greatest value.

	Men.	Women.	Total.
Patients in the Asylum November 30, 1853,	239	207	446
Admitted in the course of the fiscal year	191	199	390
Whole number	430	406	836
Discharged, including deaths	204	182	386
Remaining November 30, 1854,	226	224	450
Of those discharged, there were cured	98	66	164
Died	29	36	65

Causes of death.—Phthisis pulmonalis 15, exhaustion from acute or periodic mania 11, exhaustion of chronic mania 5, old age and protracted mental disease 4, general paralysis 4, epilepsy 4, suicide 4, erysipelas 4, apoplexy 2, hemorrhoids 2, disease of liver 1, pneumonia 1, typhoid fever 1, chorea 1, not stated 7.

"In December last (1853), a case of smallpox occurred, which, though isolated as much as possible, was followed by others, and in the two months following we had twenty-three cases. By great precautions, the disease was confined entirely to the male department."

In the spring and summer of 1853, "the domestics engaged in the kitchens were seized with typhoid fever. We attributed this to the decayed state of the floors and timbers of the basement, and the decomposing impurities beneath." These causes being removed, there were no more cases of the disease.

One hundred and eight applicants for admission were rejected, and fifty-one patients discharged, for the purpose of receiving more recent and curable cases.

"During the past, as in former years, we have had many unhappy instances of injudicious haste in bringing patients to the asylum. One lady was admitted five days after her confinement; another before the burial of the child whose death was the immediate exciting cause of her disease, and many who were far too ill to travel."

"Thirty-four patients, 11 males and 23 females, have been admitted during the year with strong suicidal propensities. In several of these cases the ancestors had committed suicide, in two of them for three generations. In one male, it was impulsive; he was also homicidal, and left home at his own request, because he felt that the inclination to destroy his children, whom he loved tenderly, was gradually strengthening, while his power of resistance was growing weaker.

"All the epileptics (10) admitted, and the cases (6) of general paralysis, had either epileptic or intemperate ancestors."

Of the 390 patients received, the disease was directly hereditary in the numbers and manner shown in the subjoined table:—

	Men.	Women.	Total.
From the paternal branch of the family	30	20	50
" " maternal branch	16	30	46
" both paternal and maternal branches	8	9	17
Total	54	59	113
Collateral predisposition manifested in the insanity of brothers, sisters, or cousins	10	19	29
Numbers in which there was a family predisposition	64	78	142

Thus, in 28.97 per cent. of the cases the disease was hereditary; and in 36-41 per cent. there were relatives insane. A larger number received the predisposition from the father than from the mother. This does not accord with the result of the researches of Dr. Baillarger, of Paris, which showed, as has been formerly mentioned in our notices, that, so far as the data which he had collected were concerned, a large majority received it from the mother.

"In one case included in the preceding table, the maternal great-grandmother, grandmother, mother, and two aunts, and the paternal grandfather, uncle, and two sisters and one brother, have been insane. In another, the maternal grandmother, two uncles, and mother, the paternal grandfather and uncle, and two brothers, have suffered from attacks of insanity."

Improper cases received.—Typhoid fever 1, chorea 1, phthisis 1, drunkards 8, feigned insanity, to escape imprisonment, 2. "Several, also, placed under the head of subacute mania, were simply cases in which there was mental prostration with tranquil delirium, the result of grave organic diseases. It is well known that when the brain and heart are seriously involved, there may be more or less prostration of the intellectual faculties; and when the lungs are implicated, often a state of exaltation not amounting to insanity. These persons were in such a feeble bodily state that we could not refuse them, although improper cases for admission, fearing they might die on their return home, as some lived in distant parts of the State. Most of them never left their beds after reception; some died in a few days, and others lingered for several weeks."

A patient received from one of the county poor-houses "had been for more than a year chained to the floor of his cell, and destitute of clothing and bedding, because *his habits were destructive and filthy*. He had lain upon straw, which was changed two or three times a week, and the person who attended him '*always carried a cow-hide, because he always attacked him, and he could only control him by whipping him.*' This man is now quiet and comfortable. Application has recently been made for the return of another, who, the superintendent of the poor states, 'has been in chains for months, and is in the most filthy and wretched condition.'"

Dr. Smith, of the Missouri Asylum, in his report for 1854, discusses the question of the propriety of establishing separate asylums for the incurable insane, and, after giving his reasons for condemning the plan, says: "I rejoice in the reflection that America has never been disgraced by one, and I trust that period will never occur." We, also, are opposed to such special institutions, but an asylum for incurables is not necessarily a disgrace to any nation. Some of those upon the continent of Europe stand, confessedly, in the foremost rank of establishments for the insane, and we have seen several of them which would not suffer in comparison with some of our asylums for both curables and incurables. Indeed, of the fifty-six *public* institutions for the insane which it has been our lot to visit, the very worst, with but a single exception, is in one of the original thirteen United States of America.

If our country has not been disgraced by an asylum erected particularly for the incurable insane, has she not been, is she not still disgraced by something even more objectionable? Read the several memorials of Miss Dix, embodying the results of her observations of the insane and their manner of treatment in the poor-houses, prisons, cellars, and specially-constructed cells in several of our States! Go to the numerous poor-houses, which have been, and still are, in effect, asylums for the incurable insane, with all the objectionable and none of the redeeming qualities of those to which Dr. Smith objects, and learn what is there to be learned. Or, simply, read the above extract from the report of Dr. Gray, and we may then ascertain whether our course, in the treatment of those who are alienate of reason, is such as to exempt us from reproach.

For ourselves, rather than allow the incurables to remain as they are this day, we would rejoice to see them collected, to-morrow morning, into purely *technical* "asylums for the incurable." The establishments once in operation, the Argus eyes of trustees, of the Association of Medical Superintendents of Asylums for the Insane, of the communities in which they might be placed, and last, though far from least, of Miss Dix, so long as Heaven shall bless her with life and health, would watch them with a vigilance sufficient to prevent a large proportion of the abuses now heaped upon the unfortunate persons who would become the inmates of them.

Patients admitted from January 16, 1843, to Dec. 1, 1854	4,313
Discharged, recovered	1,789
Died	511

"The *Opal* is still edited and published by the patients, and its proceeds devoted to their comfort and amusement. The profits of the last year, with the avails of a fair held by the ladies, amounted to four hundred dollars, which has been expended for books, improvements in the greenhouse, and in amusements. The *Opal* now receives about three hundred periodicals and newspapers in exchange."

4. The number of patients in the New Jersey State Lunatic Hospital, at Trenton, is as follows:—

	Men.	Women.	Total.
Number of patients 1st January, 1854	98	107	205
Admitted in course of the year	56	67	123
Whole number	154	174	328
Discharged, including deaths	46	69	115
Remaining at the close of the year	108	105	213
Of those discharged, there were cured	25	32	57
Died	11	12	23

Causes of death.—Consumption 4, general exhaustion 8, dysentery 8, epilepsy 1, apoplexy 1, asphyxia 1, congestion of the brain 1.

"During the months of August and September, a number of cases of dysentery occurred, several of which proved fatal.

"Besides the Museum and Reading Room," remarks Dr. Buttolph, "as a means of occupying and amusing the members of our household, we are now engaged in the erection of a calistheneum, or exercise room, twenty by sixty feet in extent, for the use of the female patients; also, a ten-pin alley for the men. Both these structures are being erected by aid of contributions from various benevolent individuals, and will form very valuable means of promoting both physical health and mental tranquillity." The calistheneum is within the inclosed grounds for the women, and its estimated cost is one thousand dollars. Messrs. Morris, Tasker & Morris, of Philadelphia, have contributed a "self-regulating hot-water furnace" with which to heat it, and several gentlemen, mostly in Newark, have given money to the amount of $675.

The laudable benevolence of many of our fellow-citizens is rapidly bringing some of the public establishments for the insane into a proper condition in regard to the facilities for curative treatment. As one extreme is often followed by its opposite, it may, perhaps, ere long, become a question whether there is not a danger that the desolation, the barrenness, and the wretchedness of the mad house of the past, will be followed, in the Hospital for Mental Disorders of the future, by an objectionable and deleterious luxury.

Two additional wings to the Trenton Asylum are in progress. The house has been so much crowded by the number of patients during the year, that their proper classification has, at times, been impracticable. But a small part of the report of Dr. Buttolph is devoted to subjects which would particularly interest our readers.

5. "That which the skeleton is to him whose general form it represents, when in his prime of manhood," such must be our notice of the report for 1854, of the Pennsylvania Hospital for the Insane.

We must fully coincide with Dr. Kirkbride in his remarks, that "because entire accuracy in every point may not be attained, it can hardly be urged as an excuse for not attempting to approach it; nor is it a sound reason for omitting all statistics, that wrong inferences and unfair comparisons have occasionally been made from some that were not entirely reliable. * * * I have never been able to discover a sound reason why tables of carefully recorded facts, or even of the opinions of intelligent physicians in reference to insanity, should not be just as important and reliable as if made in regard to other diseases."

	Men.	Women.	Total.
Patients in the hospital December 31, 1853	112	123	235
Admitted in course of the year			178
Whole number			413
Discharged, including deaths			190
Remaining December 31, 1854	117	106	223
Of those discharged, there were cured			98
Died	15	11	26

Causes of death.—Phthisis pulmonalis 6, acute mania 5, softening of the brain 4, epilepsy 1, paralysis 1, chronic bronchitis 1, acute inflammation of the bowels 1, dysentery 1, diarrhœa 1, pneumonia 1, acute dementia 1, disease of heart 1, hydrothorax 1, old age 1.

"There has been little acute disease of any kind—except of the brain—and no tendency to any of the summer or autumnal epidemics which prevailed in many parts of the country." The hospital has been full throughout the year, often crowded, and as many as fifty applicants for admission were not received.

	Men.	Women.	Total.
Patients admitted since the opening of the hospital	1384	1192	2576
Discharged, cured	661	574	1235
Died	157	114	271

From two of the tables given in the report we derive the following, in reference to the relative proportion of the different forms of mental disorder, and of their comparative curability:—

	Admitted.	Cured.	Per cent.
Mania	1273	738	57.97
Melancholia	628	324	51.58
Monomania	358	147	41.06
Dementia	306	25	8.17
Delirium	11	1	9.09

Of the 223 cases still remaining in the hospital, some will undoubtedly be restored to health, modifying, somewhat, these results.

The greater proportion of the annual reports of a public institution for the insane, pass, in each successive year, into the hands of a new set of readers. For this reason we have ever approved of the plan of entering into a more or less detailed account of the moral treatment in every report. To the constant reader this may become monotonous, but that effect is as nothing in comparison with the influence for good upon the minds of the people in regard to the true nature of these institutions, which cannot fail to be produced by such a course. In but few of the reports from our hospitals is so much space customarily devoted as in those of Dr. Kirkbride.

During nine months of the year, three entertainments in each week are given to the patients. "One evening is now devoted to scientific lectures, another to the exhibition of dissolving views, with interesting explanations of the scenery or pictures shown, and interspersed with music; and the third to music alone." On the other evenings of the week the teachers read to the patients in the wards. "The interest in these readings has been increased by the introduction of some pleasant exhibitions and music. The value of all this class of means can hardly be properly estimated by those who have not made a systematic trial of them, using them not, at long intervals, as a rare gratification, but, frequently, as a regular part of the treatment. * * * As a general rule, the more varied the pursuits of the patients, the more steadily they are kept employed in some way, the more comfortable they will be found to be, the better their general health and appearance, the more easily they may be managed, the less noise and excitement there will be in the wards, and the more efficient and valuable will be the services of those who are engaged in their care. No money expended in a hospital for the insane is better applied than when judiciously used in promoting these various objects."

A carriage-road on the pleasure-grounds for the men, similar to that on those for the women, is in progress. These roads will have a combined extent of a mile and three-quarters, and will be bordered with trees through most of the distance.

The Board of Managers of the Pennsylvania Hospital for the Insane, in view of the necessity for further accommodations, have determined to erect another establishment upon a tract of land containing seventy acres, immediately west of the pleasure-grounds of the present hospital buildings, "a site that cannot be surpassed for general adaptation and natural advantages, in a single tract, secured from encroachments by special legislative enactments." It is intended that it shall have "fixtures and arrangements of so superior a kind as, with the present buildings, to put our city (Philadelphia), in this respect, far in advance of any other on this continent, and to give to those who are mentally diseased advantages nowhere surpassed." The estimated cost is $250,000, and the buildings will be commenced when $150,000 shall have been subscribed.

The report contains an elaborate memoir of Jacob G. Morris, late a Trustee of the Institution, who was on board the Steamer Arctic at the time of her loss, and met, with so many others, an untimely death. As institutions for the insane have rarely, if ever, received such attention and sacrifice from a trustee or manager, we should fail of justice were we to omit the following extracts:—

"Possessed of an ample fortune, and with a truly benevolent heart, the activity, energy, and sound sense of Jacob G. Morris, made him a desirable manager in the charitable institutions abounding in our city. * * * * * He made it a rule to expend all his income, whatever it might be; and as his own habits were in no way extravagant, a large portion of it was devoted to deeds of charity. * * * He was strictly conscientious, and whatever he believed right he carried out steadily and fearlessly, without regard to what others might think of his course. * * * * * * * * He was elected manager of the Pennsylvania Hospital in September, 1844, and from that time took an active interest in all its departments. He was always ready to perform any services that were assigned him. * * * He was a frequent visitor among our patients, and was always joyfully received. * * * The slightest wish made by a patient, especially of the gentler sex, he rarely failed to esteem it a duty to gratify; and it was surprising what an amount of labour he would often undergo to enable him to effect it. It differed little with him whether it was to procure a toy for a child, patterns or materials for ladies' fancy work, a piano for a ward, a collection of books for the library, curiosities for the museum, or funds for some greater undertaking; he entered on the task with an equal zeal, and with an earnestness and hearty good-will, which never left a doubt of success. Rarely did he fail in anything he undertook; and his own gratification at such a result quite equalled that of those who were immediately benefited.

"He placed on our walls several valuable oil-paintings, and purchased expressly for the museum a large collection of curiosities; besides making numerous presents of a useful or ornamental character." * * When it was decided to erect the new hospital, as above mentioned, "he at once offered $1,000 as his first contribution to the work, and devoted no small portion of the little time that elapsed before his departure for Europe, in calling attention to its importance and soliciting subscriptions in aid of the object. * * * In every part of his travels he visited all the institutions for the insane worthy of note, and collected everything that he thought might be useful in our new undertaking. In the very last letter I received from him, this subject was earnestly dwelt upon, and, although anxious to be at home, he declared his willingness to return to Europe at any time as one of a commission to visit the best foreign institutions, defraying his own expenses, and contributing liberally to those of his associate." Truly, the Pennsylvania Hospital has met with a great, it is to be feared an irreparable, loss!

6. The report of Dr. Curwen, of the Pennsylvania State Lunatic Hospital, furnishes the following statistics:—

	Men.	Women.	Total.
Patients in the hospital December 31, 1853 .	99	83	182
Admitted in course of the year	93	51	144
Whole number	192	134	326
Discharged, including deaths	65	47	112
Remaining December 31, 1854	127	87	214
Of those discharged, there were cured . .			29
Died			22

Causes of death.—Exhaustion of chronic mania 10, general paralysis 4, peritonitis 2, bilious fever 2, inflammation of brain 2, consumption 1, dysentery 1

"In common with the surrounding section of country, our household was visited, during the latter part of summer and through the autumn, with intermittent and remittent fevers, in many cases of a very obstinate form, and of a very irregular character. The diseases were clearly attributable to an epidemic constitution of the atmosphere, as most of those attacked were, as far as possible, removed from the usual exciting causes of those diseases."

In discussing the etiology of mental disorders, Dr. Curwen maintains that no exciting cause will produce insanity, unless the nervous system be in a favourable condition for its development, and that that which is often assigned as the *cause* in individual cases, as, for example, the reading of the Bible, is rather the *effect* of previous mental depression dependent upon the abnormal condition of the body.

"In those who are natives of other countries, a different class of causes, to a certain extent, acts. The disappointment of their hopes, so fondly cherished and often so rudely crushed, the entire change of climate and mode of life, the difficulty of obtaining employment and support for their families, with the too frequent resort to intoxicating drinks, all contribute their share to bring on that condition of the system which ends in insanity; and the natural elasticity of the system appears to be so far destroyed that, in a large majority of cases, it never fully regains its former tone and vigour." P. E.

Art. XVI.—*An Introduction to Practical Pharmacy.* By Edward Parrish, Principal of the School of Practical Pharmacy, Philadelphia. With two hundred and forty-three Illustrations. Blanchard & Lea: 1856. 8vo. pp. 544.

On the continent of Europe, works on practical pharmacy, designed for the conjoint use of students of medicine and of pharmacy, have long been considered as indispensable to the young practitioner of either branch, and many of them have attained, and still enjoy a high rank.

In a country like our own, where, from the mere force of circumstances, pharmaceutists are seldom met with beyond the precincts of cities and the larger towns, and, consequently, where physicians must compound and dispense their own medicines, a treatise on that subject by a competent author becomes doubly valuable. And, therefore, it is with no ordinary pleasure that we have received the work with the above title.

Mr. Parrish treats of the general subject under five heads.

Part I. "Preliminary," is devoted to the consideration of shop furniture, weights, measures, and specific gravity.

Part II. On "Galenical Pharmacy," contains much that will prove valuable to the young practitioner.

Plain practical directions are given for the preparation of the different powders, medicated waters, infusions, tinctures, wines, vinegars, extracts, syrups, &c., directed in the *U. S. Pharmacopœia*, as well as for many private and non-officinal compounds. The chapter on the "Displacement Process" merits particular attention, since the subject is so imperfectly understood by the great body of our rural practitioners, who are, more or less, in the habit of compounding their own remedies. Within a few years the fluid extracts have come into vogue, in consequence of the concentration of the virtues of the drugs employed to a small bulk, and of the facility of their administration with other articles in the liquid state. Many of these, which were devised by the members or students of the Philadelphia College of Pharmacy (but which are not recognized as officinal), are fully described.

Part III. is devoted to the "Pharmacy of Plants and their Products." Under this head, the active principles of plants, available for medical use, are introduced. The inert lignin and its valuable derivative collodion; the farinaceous and saccharine groups; the protein compounds; the fixed and volatile oils; the camphors and resins; the neutral principles, such as digitalin, piperin, and salicin; the vegetable acids, as the citric, acetic, tannic and gallic acids; and the invaluable alkaloids—equally find a place.

Part IV. on "Inorganic Pharmaceutical Preparations" does not afford much addition to our previous knowledge on these points. An exception to this remark, however, is to be found in the formula for the preparation of the solution of the citrate of magnesia on page 357, which is certainly superior to that of the *U. S. Pharmacopœia* for practical purposes. The citrate prepared in the manner here recommended is agreeable to the taste, and safe and reliable as a cathartic.

Part V. on "Extemporaneous Pharmacy," treats of a variety of useful matters. The opening chapters are on the subject of prescription writing, which, although not so full as the English and French works, are sufficiently copious to repay a careful perusal. If the ordinary files of our dispensing establishments may be taken as standards, the art of prescription writing is at a low ebb; and the minds and memories of medical men may be stirred up in the premises, without any detriment either to them or their patients.

The subsequent chapters contain one hundred and twenty selected prescriptions, which are so arranged as to illustrate the different forms of combination; such as powders, pills, solutions and mixtures for internal use; and lotions, injections, ointments, plasters, &c., for external application.

Such is the general outline of Mr. Parrish's work, the first American publication on the subject of practical pharmacy. Containing much that is original, it, like most other scientific productions, exhibits a condensed summary of ascertained facts collated from acknowledged standards. The attempt to adapt the work to both the physician and the pharmaceutist, detracts, in our opinion, from its value to the advanced student of pharmacy, from the necessary incompleteness of detail in the higher departments of the science. But to the wants of the student of medicine and the young physician, we consider it peculiarly adapted; supplying, as it does, a deficiency experienced by nearly every one at the outset of his practice.

In the great medical schools, the graduate is supposed to have become familiar with the facts of materia medica, and the leading truths of therapeutics; but he soon discovers that he has only acquired the knowledge of his tools, while the ability to handle them in a proper manner is yet to be obtained. With the plain, simple, practical instructions of the text, aided by the numerous beautifully executed wood-cuts disseminated throughout, the "Introduction to Practical Pharmacy" cannot fail to be a valuable assistant and a safe guide.

Of the manner of "getting up" and the general appearance of the work, it is only necessary to say that these do no discredit to the distinguished publishing house by whom it is issued. R. P. T.

Art. XVII.—*On Bandaging and other Operations of Minor Surgery.* By F. W. Sargent, M. D., Member of the College of Physicians of Philadelphia; one of the Surgeons to Wills' Hospital, &c. &c. New edition, revised and enlarged. With one hundred and eighty-one illustrations. Philadelphia: Blanchard & Lea, 1856. 12mo. pp. 359.

This very useful little work has long been a favorite with practitioners and students. The recent call for a new edition has induced its author to make numerous important additions. A slight alteration in the size of the page has enabled him to introduce the new matter, to the extent of some fifty pages of the former edition, at the same time that his volume is rendered still more compact than its less comprehensive predecessor. A double gain is thus effected, which, in a *vade mecum* of this kind, is a material improvement. The reader will discover that Dr. Sargent has availed himself of the progress of mechanical surgery during the interval between the two editions; while he may observe that advantage has been taken of the opportunity to present several matters of minor surgery which had not found a place in the original issue. In comparing the old with the new, we find that the principal changes have been made in Part III., "On the Bandages and Apparatus employed in the Treatment of Fractures;" and in Part V., "On some of the Minor Operations." Under the first of these two heads a good deal has been added to the section on fractures of the bones of the forearm, and to those on fractures of the femur and on fractures of the bones of the leg. The fifth part, on minor operations, has been enriched with two whole chapters, one on "Incisions," and the other, an excellent one, on "The Removal of Foreign Bodies from the Natural Canals and Passages." Besides these, we note a few paragraphs on the methods of compression for the arrest of hemorrhage or the removal of aneurism, on catheterism and probing of the lachrymal canals, and on various other matters of interest, throughout the book.

We notice an error in the section on fractures of the thigh-bone, and another in that on fractures of the bones of the leg, which, although not very serious, may be worth a comment. The first is in relation to the apparatus for fractured thigh of the late Dr. Hartshorne, of this city. This is referred to as a modification of Desault's, "in which the long and the short splints are connected together by a transverse piece, through which a long wooden screw passes, having a footboard attached to it" (p. 179). Now, there is nothing in this vague sentence that affords an idea of the apparatus in question; nor is said apparatus any more a modification of Desault's splint than is the coffin splint of Gibson, which Dr. Sargent takes the trouble to discuss and represent in full as a meritorious invention. Hartshorne's apparatus was first introduced, fifty years ago, as a modification of Boyer's, but without any sufficient reason, and only because Boyer's pelvis counter-extending band and sheath were originally connected with it. These were soon abandoned, however, and with them was withdrawn the only affinity to its imaginary prototype. Dr. Sargent's reference will answer, as far as it goes, if the pelvis band of Boyer be included, for the modification of Hartshorne's apparatus, called Flagg's splint, which has long been employed in Boston and New York. The "long wooden screw" and cross-piece are among the most ancient of devices. The characteristic and only original feature of the splints intended to be indicated is not the screw or the cross-piece, but the perineal cushion or pad on the upper extremity of the inner splint, by which the counter-extension is effected in a right line parallel to the axis of the limb, and against the fleshy cushion of the ischium and pectineal space. The upper extremity of the outer splint reaches from four to eight inches beyond the rim of the pelvis, and may be attached to the body by a broad band, or not, without material difference either one way or the other. The two splints are securely locked together at their lower extremities, not by a single transverse piece, but by two small movable cross-ties, one of which is keyed into a short transverse mortice near the lower end of each splint, while the other works up and down in a narrow longitudinal mortice in each splint, long enough to allow for more or less extension, according to circumstances. This arrangement was never claimed as original by the inventor of the splint, although he always regarded it as an important and labor-saving feature of the apparatus. It afforded much greater security and facility of readjustment, while it is free from the annoyance of the clumsy and uncertain splint-cloth and bandages which muffle up the patient in the apparatus of Desault without protecting him from continual relaxation through the yielding nature of the material of which they are usually composed. The screw, although convenient sometimes, has never been regarded as essential, and may easily be replaced by an inelastic band, a tourniquet or handkerchief and stick, a rolling-pin, or a connecting bar of wood or iron. No footboard need be attached to the upper cross-piece. It is more comfortable to the patient, however, by supporting the foot and keeping off the bedclothes, and it is, therefore, generally employed. In Flagg's splint there is neither footboard nor upper cross-piece; so that the extending bands must be attached to a sort of iron prong, curved like a pair of ox-horns, which is riveted to the upper end of the iron extending screw. This arrangement fails to keep the splints together, and necessitates the resort to tapes and the leather pelvis band of Boyer, with its pocket for the upper extremity of the outer splint.

Nor is it by any means necessary, even in the original apparatus, that the inner splint and its padded upper extremity should be employed in their special and peculiar office of counter-extension. The oblique perineal-band of Desault and Physick, depending from the upper end of the prolonged outer splint, is quite as readily applied to Hartshorne's apparatus as to that of Desault and Physick, and appears to work more steadily, because the splint is more firmly supported throughout its length, on account of the cross-piece arrangement at its lower end. We have often seen it used in this way with great convenience, especially in compound fractures. The use of the inner splint, however, secures the counter-extension in the only true direction, and does away with the tendency to lateral displacement of the upper fragment. It admits, also, of a change of the seat of pressure from one groin or ischium to the other, alternately, or to the perineum in the centre, merely by altering the lateral distance between the splints. We lately saw a case of oblique fracture of each thigh, in a lad, at the Pennsylvania Hospital, which was successfully treated by means of a beautiful adaptation of Hartshorne's splint, applied by the resident surgeon, Dr. Wilson. It was constructed, under his direction, of two outer splints and one central inner splint. The three splints were morticed and keyed together in the usual way below, with the two cross-pieces for each side. Each foot was attached to its corresponding footboard and extending screw, while the counter-extension was produced by the padded extremity of the middle splint against the middle of the perineum above. The patient suffered no inconvenience, that we are aware of, from the pressure on this surface, certainly none of any moment. They might, however, have resorted with perfect ease to a counter-extending band on each side, either temporarily or permanently, as might have been desired. Still another mode of counter-extension with these splints has recently been described by Dr. Henry Hartshorne, as the development of an idea entertained shortly before his death by the inventor of the apparatus. This has not yet been tested by experience, and we, therefore, shall not stop to describe it in detail. The principle consists in the adaptation of a block, so shaped and placed as to fit and press against the gluteal and ischiatic surface of the posterior of the injured side, the block being flat on its under surface and inner and outer triangular faces, these two latter being furnished with short projecting pins, by means of which the splints may be keyed to them at the upper ends in the same manner as to the cross-pieces at the opposite extremity. This plan dispenses with one of the cross-pieces below, inasmuch as the counter-extending block may serve the purpose of a cross-piece in keeping the splints together. The idea is that the nates are by nature better qualified to indure strong and long-continued pressure than any other part of the body; while the resultant of the two oblique directions in which the pressure is exerted, is the precise direction which the counter-extension ought to take. (See *Trans. College of Physicians of Philadelphia*, for Oct. 1855, p. 441.)

We have been led into an unintentionally long digression in regard to an apparatus which has been used often and long enough to be better understood. The only excuse we have to offer is, that we have been tempted to indulge a natural desire to rescue from a very common misapprehension a time-honoured, and certainly respectable, instrument, in which we are bound to feel a strong personal interest. This is not the place, nor do we care, on this occasion, to enter on a vindication, in *extenso*, of its claims, or a discussion of its uses. Let us now pass on to the second misapprehension noted.

This also concerns a mode of treating a fracture recently practised in the Pennsylvania Hospital, and should be corrected here, if worth correcting anywhere, since it comes from a former resident of that house, and a Philadelphian. After repeating Malgaigne's statement that he has seen M. Gama treating successfully cases of transverse fracture of the patella "by means of strips of adhesive plaster passed above and below the fracture, in the form of the figure 8, the limb being placed upon the simple inclined plane," he goes on to say: "And in the *Philadelphia Medical Examiner*, p. 5, Jan. 1854, Dr. John Neill reports two cases of this injury, in which this method was pursued. It is, undoubtedly, the simplest and the best plan which can be resorted to" (p. 195). Malgaigne does describe the application of the adhesive plaster exactly as above represented, and in the same note refers to a paper of Mr. Thos. Alcock (noticed in the *London Medical Repository*, vol. i. p. 178, 1824), in which a similar mode of using the plaster is recommended in the treatment of transverse fracture of the patella. On reference to this notice, we find that, in a paper published in 1823, Mr. Alcock states himself to have been unusually successful in obtaining osseous or nearly perfect union between the fragments by means of what he justly calls a "very simple apparatus." Position and coaptation having been effected in the usual manner, he next proceeds according to directions, the first part of which may be given in his own words: "The writer has generally used strips of plaster of about an inch in breadth and a foot long, crossing obliquely from the integuments immediately above the patella to the upper and back part of the leg, the patella being within the angle formed by the crossing. This, he has believed, rendered the bandage and compressors less liable to slip; but he does not consider the plaster essential." The compresses are then applied and retained with the figure of 8 bandage. "A splint, placed in the ham, may or may not be employed."

Now this plan of Alcock and Gama is certainly not that proposed in the *Examiner*, although, Dr. Neill, by quoting this passage from Malgaigne at the close of his paper, has probably led our author into a very natural inadvertence. The plan described, and very successfully employed by Dr. Neill, expressly requires a splint; and he does not use the figure of 8 at all. He expressly avoids the circular constriction of this mode of application, and, dispensing with the bandage, relies upon the adhesive power of the broad and long strap to maintain its hold upon the integuments above and below the respective fragments, while its extremities are drawn as obliquely as possible, so as to be attached to the sides of the splint some distance above and below the patella.

The action of the straps applied in this way is obvious, and its superiority to that of the other plan need hardly be insisted on.

We have not dwelt upon these matters of practical interest in a fault-finding spirit. They are certainly very venial errors in a work which is devoted rather to the teaching of dressings and minor clinical duties than the elaborate discussion of the history or principles of the management of so serious and varied a class of injuries as fractures. It is because of the opportunity, and especially because of the well-known general accuracy, and consequently high authority, of the accomplished author of this popular volume, that we have taken the liberty to say so much about a comparatively trivial matter.

The book is, as usual with the publishers, very neatly arranged and printed, and will undoubtedly be sought after as a convenient and extremely desirable every-day companion. As such we cordially recommend it to all classes of medical readers. E. H.

Art. XVIII.—*A Treatise on Medical Jurisprudence.* By Francis Wharton, author of *A Treatise on American Criminal Law*, &c. &c., and Moreton Stille, M. D., Lecturer on the Principles and Practice of Medicine in the Philadelphia Association for Medical Instruction. Philadelphia: Kay & Brother, 1855. 8vo. pp. 815.

It is remarkable that the two original productions which were for many years distinguished, along with a few others, as having done the greatest honour to American medical literature, were those of Beck and Ray on Medical Jurisprudence. Most deservedly were they, and are they still, esteemed at home and abroad; yet, until lately, one might suppose their authors to be almost alone among their countrymen in the right appreciation of their subject, so little has it seemed to occupy the professional mind either in our medical schools or courts of justice. We trust, however, that the influence of these able pioneers, and that of their Old-World predecessors and contemporaries, have produced a more rational state of feeling in this matter. At all events, the accumulating lessons of an experience which is often decisive, though rarely pleasant in its working, bid fair to finish what Beck, Ray, and their coadjutors long ago began. They have at length opened the eyes of our community to something like a proper understanding of its actual necessities in regard to medico-legal investigations. The successive editions of the native works referred to, those also of Taylor and of Guy, and the appearance of this peculiarly interesting effort of Wharton and Stillé, indicate most decidedly the steady progress of medical jurisprudence as a cultivated science in this country.

We cannot yet point, as we ought, to our official experts and to our regular professorships of this still neglected branch of scientific training; but the manifestly increased attention to the study of legal medicine is a gratifying advance upon the once prevalent indifference to the commonest demands of justice in the use of medical evidence. Although, with the two signal exceptions already noticed, we cannot boast of our Orfilas, Caspers, or Taylors, not to instance other equally honoured names, we may, nevertheless, be assured by the growing demand for their works that the authority and worth of these masters is now acknowledged by hundreds who formerly ignored their very existence. There is good reason, therefore, in these more auspicious times, to anticipate for our present authors the privilege of a prompt and earnest reading among many who, a few years ago, might have laid their offering on the shelf almost without remark.

We sincerely hope that the promised reading may result in similar honours. This reward appears to us to have been richly earned in many ways, but we especially desire and expect the volume of Wharton and Stillé to attain a rapid and entire success, because the rare combination of two kinds of learning and experience needed for such a book, which it so happily affords, must render it unusually attractive to both classes of readers, and hence a most effective means of increasing the general estimation of its subject. There is no danger of encountering in its pages a merely medical picture of the law, or a merely legal one of medicine, or a perplexing compound of the two together, such as medical jurisprudence in theory is sometimes superficially supposed to be. They give us the result of the joint labours of an able and conscientious member of each profession, both of whom were singularly well prepared, by mental qualifications and previous habits of study, for their peculiar enterprise. Thus fitted for the undertaking, they have mutually aided and directed each other in effecting a co-ordination of the various topics—a sort of stereoscopic view—which is extremely well adapted not only to the wants and purposes of the lawyer and physician, but to the comprehension of the recent graduate or still more inexperienced student.

On this, however, as well as of their other aims, and the distribution of their duties in the composition of the several portions of their task, they may better speak for themselves in the preface of Mr. Wharton, from which we quote the following paragraphs:—

"The two points which were mainly before the authors of the following treatise when they entered upon its preparation, and the hope of reaching which formed their chief inducement in approaching a topic which has already been in other respects so ably and fully discussed elsewhere, were first, the incorporation in its pages of the results of late continental, and particularly French and German research; and secondly, the bringing together stereoscopically—if the metaphor can be permitted—of the Legal and Medical points of vision, so that the information required by each profession might be collected and viewed at the same time and within the same compass. It was felt that in the usual range of medico-legal exposition there was a great deal that, though interesting to the medical man, is unnecessary to the legal practitioner; and, on the other hand, it is equally clear that there are many points upon which the latter needs information, which the former, either from inadvertence or what would be to him their extreme simplicity, may forbear to touch. The converse also is true, viz: that the legal writer who undertakes such a work, except in subordination to medical advice, may exhibit very satisfactorily the necessities of legal practice, but will fail to supply the information by which these necessities can be met.

"These two points, viz: the absorption of recent medico-legal research in France and Germany, and the union of the medical and legal stand-points, it was here hoped to reach not so much by a concurrent authorship of each page, as by a general preliminary comparison of views and adjustment of material by the two writers by whom the task was undertaken, followed up by a division of the subject-matter between them in subordination to the plan previously agreed upon. In pursuance of this scheme, the second, third, fourth, and fifth books—viz: those on the Fœtus and New-born Child, on Sexual Relations, on Identity, and on the Causes of Death—were assigned to Dr. Stillé, with the exception of those sections in the two former which concern the legal relations of gestation, abortion, and rape; while to the present writer fell the preparation of the first and sixth books, embracing Mental Unsoundness and the Legal Relations of Homicide, together with the general disquisition on Indicatory Evidence with which the latter book concludes."

The first book, which, as the extract above informs us, is wholly due to Mr. Wharton, was issued separately in July last, and has already attained a high reputation. It contains, in the course of two chapters and two hundred and twenty-eight pages, an elaborate and instructive summary exposition, first of "Mental Soundness and its Legal Relations," and secondly of "Mental Unsoundness Psychologically considered," the two chapters being severally devoted to the discussion of these two leading topics. Each chapter is preceded by an analytical table of contents, which is admirably conceived and arranged. Similar analytical arguments are prefixed to the chapters on each of the other strictly legal divisions of the work. They are particularly valuable for guidance as well as reference, and will doubtless be regarded as among the most attractive features of the whole volume. The limits of this notice will not allow us to dwell as we should wish upon Mr. Wharton's very able and interesting view of the medical and psychological jurisprudence of insanity. It might easily, if not advantageously, be made to occupy in its consideration much more space than can be here appropriated to their entire publication. In no other way, indeed, could even tolerable justice be done to its cogent and lucid reasoning, its great erudition, its copious and unequalled array of illustrations and precedents, and its many important and often unusually liberal conclusions.

We find it the harder to resist the temptation to indulge in a more particular discussion of these opening chapters of Mr. Wharton, because a rather peculiar course of experience, which circumstances have thrown within our reach, has perhaps unreasonably interested us in the various questions mooted by him in them, while it has made us personally familiar with some of the new cases cited by him, and with somewhat of the course of reading which he has followed so assiduously and collated with so much judgment and skill. Notwithstanding all that has been written on it, no subject in the whole range of medico-legal inquiry demands more serious attention; none, certainly, is so universally embarrassing as this of mental aberration. We are honestly glad, therefore, without agreeing to all his medical propositions, to believe that we have met with no writer who has managed this difficult theme, in the same compass, with greater clearness, fulness, and more practical good sense. His tract is especially rich and accurate in its citations of legal precedents, and fair in its estimate of the nature and weight of medical opinions. On these accounts we are inclined to regard it as the most valuable and conclusive paper yet published on the subject.

No opinion as to the law and the legal aspects of the first and other sections for which Mr. Wharton is responsible can be expected from a medical reviewer. We may say, however, that in seeking instruction from his pages as a medical inquirer, we have been most agreeably impressed, in the succeeding portions of his essay, with the same precision and conciseness of expression, ample fulness of illustration and example, especially from French and German sources, and the same careful discrimination and methodical arrangement which render the first portion so useful and engaging to all intelligent readers. The only material drawbacks that we know of in the book are an occasional tendency to give what may be thought undue prominence and space to reports of certain cases, and the introduction, although but for the sake of illustration, of an imaginary case, in a long passage from a well known work of fiction. It would be easy, without resorting to the powerful but misplaced myth of the eccentric poet here referred to, to enrich our notice with selections from many characteristic and stirring passages with which his pages, like those of every first-rate treatise of the kind, are filled; but we must hasten to the no less sterling material furnished by his lamented associate in the strictly medical portion of the volume.

Five books were assigned to Dr. Stillé. The first of these, book second, is divided into six chapters, which treat, in regular order, of Signs of Pregnancy, Delivery, Duration of Pregnancy, Superfœtation, Abortion or Fœticide, and Infanticide. The third book is occupied, in three chapters, severally, with Doubtful Sex, Sexual Disability, and Rape. Next comes book fourth, in one chapter, devoted to the Identification of the Living or Dead. Book fifth completes the series with the discussion of the Questions relating to the Cause of Death, in two parts. The first of these parts is divided into numerous chapters, which treat of poisoning and the various poisons under the customary heads. The second part concludes the course with the history of the other Forms of Violent Death, such as wounds, burns, spontaneous combustion, heat, sunstroke, lightning, cold, starvation, suffocation, strangulation, hanging, and drowning; and lastly, with a chapter on Medico-Legal Examinations, including a new and excellent summary of the natural aspect of the internal organs.

No one who reads these pages of Dr. Stillé with the slightest care can fail to perceive that the promise of the preface is in all respects fulfilled, and, in regard to French and German cases, even more effectively than by his accomplished collaborator. The nature of his subject, and the means at his command, enabled him to draw abundantly from those rich and comparatively inaccessible mines of scientific wealth; and he has evidently availed himself of the opportunity to an extent and in a manner which not only gives freshness and new vigour to his work, but greatly increases its actual value to every English reader. We do not see, however, that in thus gathering and digesting, with remarkable success and at great expense of time and trouble, a large amount of the most varied and authoritative continental records of experience, he has made any sacrifice of important British or American materials. Recent and old cases and decisions of both countries are freely used and introduced. In short, the whole course of inquiry on the different topics is laid before us clearly, briefly, and without pretension, yet with a logical precision and elegance of language, a discriminating cautiousness and intelligent firmness of opinion, which will at once secure respect for it as a standard authority, and lead to the adoption of the work as one of the most absorbing of its class.

It would afford us a melancholy pleasure, had we room for it, to show, as could easily be done, by a few specimens of his style and mode of handling his topics, that we have not been extravagant in attempting to do justice to the merits of the first and last great work of our departed friend. We cannot and need not detain our readers with the recital of the only too vain regrets that the thought of this crowning effort of his short career must ever rouse within us for the irreparable days and nights of life-destroying toil and utter forgetfulness of self, which the exhausting development of that long but luminous and enduring labor of love has cost. All who may enjoy and profit by its now sadly cherished fruits must feel a share of disappointment at the untimely loss to science of one whose very first step was one of such high promise; but his professional associates and the few confidants in his favourite aspirations and pursuits alone can realize the breadth and depth of the misfortune. Among these none was more entitled or better able to express the common sentiment, and to put it permanently on record, than his surviving colleague in the treatise on medical jurisprudence.

We are glad to have the opportunity to affirm, with all our hearts and to the full extent of our knowledge, the sincerely just and feeling tribute of Mr. Wharton presented in the following extracts from his preface:—

"Of the manner in which was performed at least a portion of the task whose history is now given, it may not be unsuitable for the writer who now survives to speak. It was to the preparation of this portion that the last year of Dr. Stillé's short but distinguished professional career was given. It was a year of patient and severe research, marked, to an extent of which the annals of science afford few parallels, by the most self-denying industry, as well as by a rigorous and almost fastidious conscientiousness in the pursuit not only of truth, but of the most appropriate terms by which that truth could be expressed. And the labour was not one which derived any portion of its severity from the want of prior preparation. Dr. Stillé had not only enjoyed great opportunities for literary and professional culture, but what is rarer, these opportunities were faithfully improved. The liberalizing influences of European culture, as well as the simpler discipline of home instruction, passed not over him in vain. The schools of Europe received from him in the prime of his early manhood the same single and conscientious attention as the schools of Philadelphia in his youth. He found the pleasures of travel and the desultory influences of foreign habits of no more avail in drawing him from a laborious personal attendance on the hospitals—those great repositories of disease which, in the development of God's wonderful providence, are made the arsenals which supply the weapons by which the maladies that necessitate them are to be combated—than he found the more primitive habits and more limited associations of his native city. The great continental tongues, in their scientific as well as their popular relations, were mastered by him to a completeness of which, among persons of his age, we have rare examples. Few men, even among the most mature, have gone to the grave so richly fraught with the literature of a profession, which to him was a philosophy as well as an art. And few, at so early an age, have gone to the grave with faculties under more complete moral discipline. To one of his most remarkable qualities—that delicate and yet modest firmness of perception which, unwarped on the one side by pride in his own opinion, or on the other by undue deference to that of others, enabled him, after the most difficult and subtle research, not only to reach but to express the truth—no one has had better cause to testify than the present writer. The work which these lines now close was one which brought both of those who engaged in it into the most intimate and affectionate personal intercourse for many months; and the one who survives can now scarcely look back upon the preparation of a single page without having additional cause to remember and record those high mental qualities and culture, whose value in the present case was only increased by the gentleness, the refinement, and the fine sense of personal honour with which they were associated.

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"Perhaps, indeed, even in a profession whose history has been so marked by acts of zeal and disinterestedness, when we take into consideratian the fact that Dr. Stillé was impelled by no other motive than that of professional love and enterprise in the severe course of study and self-sacrifice in which he was engaged, there will be found few cases where these qualities have been so eminently exhibited as the present. Possessed of an ample fortune, he was one of those uncommon instances in which the most arduous and protracted courses of preliminary trial are gone through with under the calm and equal effect of a will which is impelled neither by necessity nor the desire of present applause, but by the faith in a distant future, in which the result will be none the less precious because it is the longer delayed.

"But this future was one to which Dr. Stillé—and to the great loss of popular as well as of medical science—was only in part to arrive. Early in 1855, he received the appointment of Lecturer on the Practice of Medicine in the Philadelphia Association for Medical Instruction, and at the end of June closed the first portion of a course of lectures of which it is not too much to say that they were received with unmixed satisfaction by the class to whom they were addressed, and the colleagues with whom he was associated. In the first week of July, he sent from his office the last of the manuscript of that portion of the following pages which fell under his charge, and almost immediately afterwards was stricken down by a disease which found him with strength impaired by the exhausting studies of the preceding winter. On August 20, 1855, he died, at Saratoga, almost at the moment when the press was issuing the last sheets of a work which contains so much worthy of being erected as a monument in which his professional brethren will recognize the impress of his high intellectual gifts and culture." Pp. iv., v., vi. of Preface. E. H.

ART. XIX.—*Clinical Lectures on Paralysis, Diseases of the Brain, and other Affections of the Nervous System.* By ROBERT BENTLEY TODD, M. D., F. R, S., Physician to King's College Hospital. 8vo. pp. 311. Philadelphia, 1855: Lindsay & Blakiston.

THIS is a most admirable book. The lectures it comprises were those delivered by the author, on various occasions, during the last ten years, in the theatre of King's College Hospital, London. They present with great lucidness and accuracy an exposition of the pathology and therapeutics of several of the most frequent of the affections of the nervous system. Dr. Todd, whether in presenting the history and causation of the diseases of which he treats, or their proper management, with a view to their abatement or cure, discards all hypothetical speculation, all conjecture and mysticism, and confines himself to known facts and observations and well-ascertained results, so that the reader cannot fail to rise from the perusal of these lectures with clear and practical views, better adapted to lead him aright at the bedside of his patient than such as he might perchance attempt to acquire from treatises of a more learned and imposing character.

The disease most fully treated of in the present work is paralysis, with the several conditions which give rise to and attend it. It is the subject of the first sixteen lectures, comprising two hundred and fifty of the three hundred and eleven pages. The seventeenth lecture is on syphilitic disease of the dura mater and its results; the eighteenth treats of acute idiopathic trismus, the nineteenth of chorea, and the twentieth of local hysteria and catalepsy.

The teachings of the author on each of these subjects are strictly clinical, arising out of, and confined to the circumstances of cases under treatment, by which the pathological views advanced by him are illustrated, and the plan of treatment laid down, explained and enforced.

Paralysis, although only a symptom—an effect due to a cause, which cause itself is not always the essential disease—is nevertheless so important and prominent a symptom, and by its presence entails upon the patient, if not any serious amount of actual suffering, so great a degree of inconvenience and decrepitude, while it may become of itself the immediate cause of death, that it would seem to demand a special consideration.

Paralysis is invariably the result of either an affection of the nerve or nerves, whose power is destroyed in some part of their course, or a morbid state of the centre in which the nerve or nerves are implanted, or with which they may be less directly connected.

"Whatever interferes materially with the conducting power of nerve fibre, or the generating power of nerve vesicles (gray matter), will constitute a paralyzing lesion. Thus, in the first place, poisoning of the nervous matter will operate in this way. Soak a portion of the nerve of a living animal in chloroform, or ether, or opium, and it will fail to propagate the nervous force as long as the influence of the poison lasts. In a similar way, the poison of lead in the living system may paralyze by weakening the conducting or generating power of the nervous matter. Poisons formed in the living system may operate in the same way; such as retained urinary or biliary principles, or the poison of rheumatism and gout. Secondly, any morbid process which greatly impairs the natural structure of nerve matter will paralyze. Thus inflammation will do this; so also will atrophy, or wasting from want of sufficient supplies of nutrient matter, as when the flow of blood is lessened or cut off. The opposite conditions of hardening and of softening of the nervous matter become paralyzing lesions for the same reason that they greatly impair or destroy the nerve-structure. Thirdly, a solution of continuity of nerve-fibre will paralyze. Cut a nerve across, and you have immediate palsy of the parts which the nerve supplies below the section. This solution of continuity from a melting down of the fibres is, I have no doubt, the frequent cause of sudden paralysis in cases of softening, or in cases of sanguineous effusions. Fourthly, pressure on a nerve or nervous centre will paralyze. Of this we have many proofs as regards nerves; a nerve, for instance, included in a ligature, or compressed by a tumour, is paralyzed thereby. A fracture of the skull, with depressed bone, will paralyze if the brain be sufficiently compressed; an apoplectic clot on the exterior of the brain paralyzes by compression; so also a tumour in its substance. It is probably by compression that congestion paralyzes; but you will, I think, find that this cannot often be regarded as a paralyzing lesion.

"I would say that the centre of volition is of very great extent: it reaches from the corpora striata, in the brain, down the entire length of the anterior horns of the gray matter of the spinal cord, and includes the locus niger in the crus cerebri, and much of the vesicular matter of the mesocephale and of the medulla oblongata. Disease of any part of this centre is capable of producing paralysis; but as the intracranial portion of it exercises the greatest and most extended influence in the production of voluntary movements, so disease of this portion gives rise to the most extended and complete paralysis."

We have not presented the foregoing sentences, which are from the first lecture of Dr. Todd, because of anything novel in the views set forth in them—they, in truth, express no other than generally received facts—but to show with what clearness and, at the same time, conciseness, medical truths may be communicated. The general truths in reference to the immediate causation of paralysis are as precisely defined as though their exposition had been spread over many pages.

We present the lecturer's account of hysterical hemiplegia, or that form of hemiplegia which occurs in hysterical patients, without any apparent lesion of the brain, a complaint far more common, we suspect, than is generally supposed, and one in regard to which it demands some care, in order to arrive at a correct diagnosis. The variety most frequently met with, according to Dr. Todd, is that known as "hysterical aphonia"—aphonia being, however, a misnomer, as the subjects of it are almost always able to speak in a whisper.

"This," says Dr. T., "may be considered the type of this kind of paralysis. It frequently comes on very suddenly, and goes off just as suddenly as it came. A young lady, for instance, will go to bed quite well, and when she gets up the next morning she is unable to speak. After a time her voice comes back suddenly, and it often returns under the influence of strong emotion. The loss of voice may go on for many weeks; indeed, in the last case of the kind that I have seen, it continued upwards of three months. In some of these cases, the patients are in a very weak state of health, but in others there is apparently no great deviation in this respect from the normal condition.

"Let me mention to you here an instance of the sudden manner in which the lost voice will return in cases of this kind. The patient was a young lady who had lost her voice. She came to see me several times; after having thoroughly satisfied myself as to the nature of the affection, I assured her that her voice would come back quite as suddenly as it went away, some day, perhaps, when she least expected it. One morning she came to see me, as usual, and, having been reminded of what I had so often told her, she left the house; she had hardly walked ten yards from the street door when she recovered her voice. Her sister wrote to me immediately to acquaint me with this happy fulfilment of my prediction, and added that, on returning home, her relatives would not believe but that I had been electrizing her, or performing some conjuring upon her; and, no doubt, had I shortly before tried some new remedy, or made some mysterious passes before her, one or other of those expedients would have had the credit of the cure. What you have to do in such cases is to satisfy yourselves that there is no morbid condition of the laryngeal mucous membrane, whether tubercular or otherwise, and if no seriously disturbed state of the system should arise, you may prognosticate with certainty that the voice will in due time come back. The subject of hysterical aphonia I have brought under your notice as exemplifying the typical form of *hysterical paralysis*, which, in these particular cases, consists in a weakened state of the nerves and muscles of the larynx. But hysterical paralysis sometimes affects one limb only, sometimes both lower extremities, constituting '*hysterical paraplegia*;' and sometimes, though certainly least commonly, the upper and lower extremities on one side, and then it will constitute '*hysterical hemiplegia*,' a condition which, although its existence is denied by some authorities, still is sometimes, though rarely, met with." "It occurs in the same class of persons, under similar circumstances as other forms of hysterical paralysis. The period which immediately follows that of puberty, and that which precedes the change of life, seem to me most liable to hysterical affections. They are brought on by exhausting causes, such as excessive menstruation, leucorrhœa, over-work, anxiety, or excitement, or, indeed, by any debilitating influences.

"In the hysterical hemiplegia, neither the face nor the tongue is affected; the palsy is limited to the upper and lower extremity, and is often not complete; the muscles are generally relaxed, but do not suffer much in their nutrition as compared with those of the other side; now and then one or both limbs may be affected with spasm of some of the muscles, or may have a tendency to pass into cataleptic rigidity. In walking, when the palsy is pretty complete, the leg is drawn along, as if lifeless, sweeping the ground."

"I have thought it important to bring before you this form of one-sided or hemiplegic paralysis, because it may so far simulate that from cerebral lesion, as to lead to serious mistakes in practice. A very serious mistake would be to pronounce the paralysis from brain lesion to be hysterical, and this is the more possible, as a state of hysterica may coexist with brain lesion, which may give to the paralyzed limbs much of the hysterical apparent lifelessness."

From the cases given in illustration, we copy the second, which, as Dr. T.

remarks, excited great interest from the early age of the patient, and from the many points of resemblance to the purely hysterical affections it exhibited. The patient was nineteen years of age, and came into the hospital the 28th of January, with incomplete paralysis of the right arm and leg, also of the right side of the face, the muscles being flaccid.

"The patient did not exhibit any signs of paralysis. The pupils were equal. Her mode of progression resembled that which I have described in the hysterical palsy, as she seemed to sweep the foot along the floor as she walked. The power of the arm and hand was not so much weakened as to prevent her doing many useful things. Thus, on the 29th of January it was reported: 'She can dress herself, and fasten her gown without any difficulty, and she was observed yesterday arranging her back hair, but she complains that she cannot do any neat work, her fingers feel numbed, and she can scarcely feel the needle which she holds. She complains of numbness and weakness of the right side, and a sense of weight in the arm. The grasping power is much impaired, and the sense of touch is less acute than on the left side, she has no headache, and cannot assign any cause for her illness; no evidence of heart disease, her appetite is very good, almost ravenous. Bowels regular.'

"Now the history of this girl was as follows: She was of healthy parentage. She was born and lived all her life in a village in Kent, not far from London. Her general health had never been very good. Three years before her admission she had had typhus fever. She was naturally of a nervous disposition, subject to great variation in her flow of spirits, and suffered from frequent attacks of giddiness. She had menstruated regularly for the last three years, at intervals of three weeks, and lately the discharge has been profuse, continuing for about four or five days. There was no leucorrhœa. Two months before her admission, she suddenly felt her right foot, while walking, become numb and weak, and she began to halt a little on that side. The palsy and numbness gradually extended up the whole of the leg and thigh. The right arm now became similarly affected, and felt cold and heavy; the features became at the same time slightly distorted, and the speech a little affected."

The diagnosis of this instance was attended with some difficulty. The existence of facial paralysis seemed to indicate that it was not purely hysterical. Still Dr. T. was tempted to take the more hopeful view of the case, from the resemblance of its mode of progression to that which he had noticed in hysterical cases; also, from the early age of the patient, a period when so extensive hemiplegia does not often exist, and, from her catamenia being regular, as also, from her having latterly become subject to severe hysterical fits, and her sisters having been likewise subject to similar attacks.

"Another feature noticed in this case, and also in hysterical palsy, was the inability to excite reflex actions; but no reliance could be placed on this as a diagnostic sign. After a time, symptoms occurred which rather militated against this diagnosis, the patient became subject to attacks of violent sickness, which would last for two or three days, and were so severe that, during this time, everything was rejected by the stomach. I may remark here, that nothing seemed to relieve these attacks of sickness so much as free purgation by large doses of calomel. At the same time, the hysterical paroxysms increased in frequency and severity, the attacks were so severe as to border on the epileptic, but we tested her sensibility on several occasions, and found that she always evinced sufficient consciousness to show that they were not of the latter kind."

"After she had been a fortnight in the hospital, the paralysis increased, and at length became complete, the relaxed condition still remaining. At length she died in one of the hysterical paroxysms, eight months after the attack of paralysis. On examination of the brain after death, the left hemisphere was found to be the seat of considerable lesion, which appeared to be due to deposition of tubercular matter about midway between the convolutions on the outside, and the corpus striatum and optic thalamus within. There was a large amount of softening of the brain substance, all around the deposit, so that the white matter seemed diffluent, and fell away, leaving a large cavity just outside the lateral ventricle. The disease, no doubt, consisted in the gradual deposit of this scrofulous matter. So long as this was small, and the brain substance around it healthy, the palsy was slight, but as soon as the cerebral fibres, especially those going to the corpora striata, became softened, and altered in their nutrition (under the influence of the pressure of the scrofulous matter), the paralysis became complete.

"In this case we had an example of the hysterical diathesis highly developed, and complicating the effects of cerebral lesion. The difficulty of the diagnosis was at one time much enhanced by the exquisite character of the hysterical phenomena, and to a degree which cannot be fully appreciated by those who have only heard or read the details of the case, and did not see the patient. The result confirmed the value of face palsy, as a distinguishing symptom of the paralysis of brain lesion from that of hysteria.

"The diagnosis of hysterical paralysis, whether it be of the hemiplegic or paraplegic form, or whether one limb only be affected, depends on these points:—

"1. The hysterical constitution of the patient herself and of her family; and there are certain signs which, as you know, are held to be indicative of the *hysterical diathesis*, such as a lax condition of the tissues generally, a peculiar fulness of the upper lip, drooping of the upper eyelids, &c.

"2. The absence of signs of lesion of the nervous centres.

"3. The characters of the paralysis itself; the absence of palsy of the face and tongue; the peculiar movement of the leg in progression; the fact of the paralysis not being complete, the muscles not being so much wasted, and the fact of the patient being sometimes able, under the influence of strong emotion, to use the paralyzed limb as well as the sound one, or nearly so. But you will not fail to recollect that, even in decided lesion, the paralyzed arm is sometimes moved in yawning or sighing, or under strong emotion."

Another important form of palsy is that which occasionally follows, and is caused by the epileptic paroxysm, and which, to mark its relation to the fit, Dr. T. would designate as "*epileptic hemiplegia.*"

"A patient has a fit, distinctly of the epileptic kind; he comes out of it paralyzed in one-half of the body; generally that side is paralyzed which had been more convulsed than the other, or which had been alone convulsed; but the paralysis may occur where both sides had been convulsed equally. The paralytic state remains for a longer or shorter time, varying perhaps from a few minutes or a few hours to three or four days, or even much longer. It then goes off, or improves, until the next epileptic fit, when a train of phenomena, precisely the same, recurs with like result."

In two instances Dr. T. has known the paralysis to precede the epileptic fit.

"What," inquires the lecturer, "is the paralyzing cause in such cases as these, especially when the paralysis is so transient as to pass off in a few minutes, or even hours? Those who are so ready to explain all brain symptoms by a reference to congestion, will, of course, find no difficulty in discovering a local congestion, which occurs at the time of the fit, and remains for a longer or shorter time after it; and this congestion compresses some part of the brain, and causes paralysis. But I cannot too strongly impress upon you, that you must not rest satisfied with such a clumsy explanation as this. It is unsatisfactory in a scientific, and dangerous in a practical point of view. The vessels of a part, all important as they are to its nutritive and other vital actions, are, nevertheless, only secondary elements in the construction of the organ; and, unless in themselves diseased, they can play only a secondary part in the production of organic or functional derangement. Congestion of bloodvessels, or hyperæmia of a part must be an *effect*, either of some disordered state of the intrinsic elements of the tissue, or of the blood, or of the forces by which the blood circulates. And a sound pathology ought to receive no other explanation of morbid phenomena, or of congestion if it exist, but that which traces the real state of these."

"The phenomena of the epileptic fit depend upon a disturbed state of the nervous force, in certain parts of the brain—a morbidly excited polarity. This may take place under the influence of some poison which may have an affinity for those parts, such as prussic acid, in the same way as strychnine induces an exalted polar state of the spinal cord, or from some disturbance of nutrition, which may be strictly local, or sympathetic. This undue exaltation of the polar force induces, subsequently, a state of depression or exhaustion, not only in the parts primarily affected, but in parts of the brain connected with them, according to the degree of the primitive disturbance; just as undue muscular action exhausts the muscular force. The disturbing cause may operate, primarily, upon parts of the brain more directly concerned with the phenomena of consciousness, as the hemispheres; upon parts which, when excited, may cause convulsions, as the mesocephale, the region of the tubercula quadrigemina. If the former be chiefly affected, and the latter slightly or not at all, convulsions are either very slight, or do not constitute a part of the epileptic fit. If, on the other hand, the latter are chiefly and primarily disturbed, convulsions form the prominent part of the fit. Now the exciting cause of all this disturbance generally operates equally on both sides of the brain. But it may operate more on one side than the other. It leaves behind it a more or less exhausted state of brain; which, again, will be most upon that side upon which there has been the greatest previous excitement. This state of exhaustion is very apt to continue as one of weakened nutrition, in which the brain tissue is more or less in the condition of white softening. If the parts involved in this be the convolutions, mental power, memory, perception suffer; if deeper parts, as the deeper parts of the white matter of the hemisphere, and the corpora striata, optic thalami, then we have hemiplegic paralysis."

Another form of paralysis, very apt to mislead the inexperienced practitioner, is that which sometimes occurs in patients affected with chorea, and hence named by Dr. T. "choreic hemiplegia."

"In a large proportion of cases of chorea," he remarks, "the choreic movements occur more on one side than on the other; and sometimes they will be altogether confined to one side—the child being hemiplegically affected in a very exact manner. When, in such a case, the choreic movements have wholly or in a great measure subsided, the patient remains paralyzed in the limbs which were before the seat of convulsive movements. The phenomena now resemble, in many points, hemiplegia from a decided lesion of the brain. But you will, I think, generally observe the following points of difference. First, you will often find the face not affected, or if it be, only slightly so; secondly, there will not be any paralysis of the tongue, but more or less of the peculiar mode of protrusion which characterizes chorea; thirdly, the paralyzed limbs will exhibit, even in a very slight degree, the choreic movements."

In regard to the condition of the nerves and nervous centres in this form of paralysis, Dr. T. believes it to be very analogous to that in epileptic hemiplegia. Chorea being, in his opinion, due to a disturbed nutrition of some part of the brain, in intimate connection with the centre of volition; it is evident that the disturbing cause may act exclusively on one side of the brain, or more on one side than the other. The effect of this disturbance being first manifested in an irritative state, creating the choreic movements, which passes, sooner or later, into an exhausted or paralytic state.

There are a number of points in reference to the pathology of the several forms of paralysis upon which we should be pleased to direct attention to the clinical observations of the author. There is much, too, deserving of particular notice, in the teachings comprised in the eighteenth, nineteenth, and twentieth lectures on the pathology and treatment of acute idiopathic trismus, chorea, local hysteria, and catalepsy; but we are convinced that the work of Dr. T. requires only to be known to find its way into the hands of every practitioner who is desirous of acquiring clear views in relation to the character, diagnosis, and management of a class of cases of very frequent occurrence, and when they do occur, often perplexing in their diagnosis; a mistake in regard to which may, unfortunately, lead to errors of treatment of a very serious character. We most cordially recommend the "lectures" of Dr. Todd to the medical profession of this country; we know of no work the attentive study of which will more fully repay the practitioner for the time thus consumed by communicating to him precisely that information which he requires. With this recommendation we had intended to close the present notice; we must, however, be permitted to make one other quotation. It is in reference to a form of local hysteria, in relation to which the grossest mistakes are made, leading to a practice, which, if not in all cases positively injurious, is, to say the least of it, illy calculated to produce favourable results.

"Another form," says Dr. T., "in which we find local hysteria manifesting itself is exhibited in that condition called '*hysterical spine.*' If you pass your finger down the spine, you will find some places very irritable; perhaps the painful situation may be confined to one particular spot, or it may extend over three or four spinous processes, or the whole spine may be affected. Wherever it be, you will find that the patient suddenly shrinks as soon as the irritable part is touched, and appears to suffer, and no doubt does suffer exquisite pain. Now this condition has been over and over again mistaken by careless practitioners for disease of one or more of the vertebræ, and in consequence, the unhappy patients have suffered from all the artillery of physic; leeches, blisters, and setons, have been applied to the spine, and other antiphlogistic measures have been resorted to, but without any effect beyond, perhaps, aggravation of the pain. The most important point, by means of which you may distinguish vertebral caries from the hysterical affections, is this: in the vertebral disease the pain is not so excessive, and is always fixed in one part, and it will be found to increase gradually as the disease advances." D. F. C.

Art. XX.—*History of Medicine, from its Origin to the Nineteenth Century, with an Appendix, containing a Philosophical and Historical Review of Medicine to the present time.* By P. V. Renouard, M. D. "The Sciences are gradually developed. It is only by reviewing past centuries that we can determine their laws of growth." *Translated from the French* by Cornelius G. Comegys, M. D., Professor of the Institutes of Medicine, Miami Medical College. 8vo. pp. 719. Cincinnati, 1855. J. B. Lippincott: Philadelphia.

A history of medicine, from the earliest periods to the present time, exhibiting the gradual steps by which it has risen, from the rude empiricism which characterized its early infancy, to its actual condition as a science and an art—and its progressive emancipation from the errors engrafted upon it by ignorance, superstition, mysticism, and the reigning systems of philosophy, has long been greatly needed, for the use of such as are unable to consult the continental works on this subject in their native languages. Even were these to be translated into English, they are, in the main, far too diffuse for the wants of the profession generally, while several of them are so replete with learned research, and bibliological and verbal criticism as to be adapted only to the tastes of a small class of readers. The work of Dr. Renouard is, we admit, an exception, and we are gratified that it has been placed within the reach of the English reader. Sufficiently full on every topic calculated to throw light upon the history of the healing art, and composed in a truly philosophic spirit; in its general arrangement and style it is well adapted for the use of such as have neither the time nor the disposition to labour through more ponderous tomes, even though replete with learning and antiquarian research.

From the pages of Dr. Renouard, a very accurate acquaintance may be obtained of the history of medicine—its relation to civilization, its progress compared with that of other sciences and arts, its more distinguished cultivators, with the several theories and systems proposed by them; and its relationship to the reigning philosophical dogmas of the several periods. His historical narrative is clear and concise—tracing the progress of medicine through its three ages or epochs—that of foundation or origin—that of transition, and that of renovation.

The first of these ages comprises, according to the arrangement of Dr. R., four distinct periods: 1. The primitive, or that of instinct; ending with the destruction of Troy, 1184 years before Christ. 2. The sacred or mystic; ending at the dispersion of the Pythagorean society, 500 years before Christ. 3. The philosophic, ending with the foundation of the Alexandrian library, 320 years before Christ; and, 4. The anatomic, ending at the death of Galen, A. D. 200. The second, or age of transition, Dr. R. divides into two periods: 1. The Greek, ending with the burning of the Alexandrian library, A. D. 640; and 2. The Arabic, ending at the revival of letters, A. D. 1400. The third, or age of renovation, he divides also into two periods; the first, or erudite, comprising the 15th and 16th centuries; and the second, or reform period, comprising the 17th and 18th centuries.

Such is Dr. R.'s historical arrangement of medicine; in a professional point of view, it is considered by him under four distinct phases:—

"First, a patriarchal phase, which corresponds to the origin of society—to an epoch when the chief of a family united in himself all power, and was the depository of traditions.

"Second, a sacerdotal phase, which reigned long in Egypt, and flourished in Greece, from the Trojan war to Hippocrates, and which reappeared in Europe during the Middle Ages.

"Third, an unlicensed lay phase; the worst of all in regard to the dignity and morality of the profession.

"Fourth, a licensed, or organized lay phase; the most perfect of all known professional forms, the most appropriate to the present state of Europe, and the most favourable to the progress of science and art."

That the reader may understand what precisely the author means by the unlicensed and licensed lay phases of the medical profession, we present the following remarks which occur in connection with his exposition of the deplorable and degraded state of medicine in China:—

"How inconceivable is the stupid indifference of a government which requires no guarantee of knowledge or morality on the part of individuals who are every moment the arbiters of the health and the life of their fellows; whose profession renders them the depositories of the most sacred family secrets, by giving them easy access to persons of all sexes, ages, and conditions. It is said that physicians in China are, generally, but little respected; nor do they deserve more consideration, excepting those in which the profession is hereditary. This deep discredit into which the Art of Healing is fallen, or rather of those who cultivate it, need not astonish us; it is the natural result of *the absence of all law regulating the practice of medicine.* The same is true among all nations under analogous circumstances, as this history will prove. We might refer the reader, by anticipation, to the picture that Galen has drawn of the deplorable effects of the medical anarchy which reigned at Rome in his time; we might also refer to the low state of Medicine during the first ages of the feudal period, before the establishment of universities. But, without searching so far back into the annals of the race, it will suffice to place before the eyes of the reader the reflections which such a state of things suggested to the author of the medical law of the 19th of March, 1803."

"The utility of this consolatory art, says M. Thouret, has been felt among all nations, and in all ages. There exists no government which does not render it a favourable support, and which is not interested, more or less, in its progress. Anarchy, only, which respects no institution, could ignore the importance of the healing art; it belongs to every reformative government to restore to this branch of instruction its ancient splendour and advantageous results."

"Since the decree of the 18th of August, 1792, which suppressed the universities, faculties, and learned corporations, there is no longer any regulation for the privilege of practising medicine or surgery. The most complete anarchy has taken the place of the former organizations. Those who have studied the art find themselves confounded with those who have not the least notion of it. The lives of citizens are in the hands of ignorant and greedy men; the most dangerous empiricism, and shameless charlatanism impose, everywhere, upon credulity and good faith. No proof of knowledge and skill is required; the country and cities are equally infested with quacks, who deal out poison and death with an audacity that our present laws cannot repress. The most murderous practices have usurped the place of the principles of the art of midwifery. Impudent barbers and bone-setters assume the title of health officers, to cover their ignorance and greediness. Never has the list of secret remedies, always dangerous, been so extensive as since the suppression of the faculty of medicine. The evils are so grave and so multiplied, that many mayors have sought a means of remedying them, by establishing a kind of jury charged with power to examine the persons who wish to practice medicine in the departments. But these local institutions, independently of the variety of tests of qualification that they have adopted, open the door to new abuses, arising from the superficial nature of the examinations, and sometimes from a still more impure source. It is then urgent to destroy all these evils at once, and to organize *a uniform and regular mode of examination and reception for those who wish to devote themselves to the cure of the sick.*"

Throughout the several ages, periods, and phases of its history, Dr. R. has traced the healing art, from its first rude infancy, when it was left to the necessities of each family, and the instincts which appropriated any feasible remedy for the alleviation of the suffering induced by disease or accident, to its condition at the opening of the nineteenth century, with becoming care, and in that philosophic spirit, which, while it enables the reader readily to appreciate the successive changes the science and practice of medicine have undergone, and the gradual development they have experienced until the attainment of their present more perfect state. He has, at the same time, pointed out to him the causes that have retarded their progress, and occasionally turned them aside from their legitimate path and objects, as well as the means calculated most effectually to insure their establishment in the future on a proper and secure basis.

Dr. R. has endeavoured, throughout the present history, to show that empiricism, or the empirical method, is alone applicable to the proper and successful cultivation of medicine, and that therapeutics, instead of physio-pathology, is the true foundation upon which the science of medicine rests.

The following extracts from the general *resumé* which he presents in the twelfth chapter of the work, will afford our readers a general idea of the arrangement of the history, and of the opinions of its author on the subject of the empiri-methodic doctrines which are advocated by him as including all the branches of medical science and uniting them by a natural tie, supported by reason and history:—

"The history of medicine, considered in its totality, from the commencement of society to the present epoch, offers us three principal phases, which we have designated by the names of age of foundation, age of transition, and age of renovation.

"During the first phase, which terminated at the death of Galen, toward the end of the second century of the Christian era, we have seen the healing art commence among all nations in nearly the same manner. We have recognized that it was not a pure invention of the genius of man, but that it owed its origin on one hand to the invincible instinct which leads us to fly from pain and seek means for its relief on the other; to that inclination, eminently social, called sympathy, which impels us to succor our fellows in their sufferings.

"The discovery of the earliest remedies was due to accident, instinct, and experience. But as soon as a knowledge of a certain number of medicaments applicable to some determined diseases had been acquired, it became necessary to arrange this knowledge in an order which would render its application more easy and sure. From that time reason or philosophy united with experience to give perfection to the art. Thus, instinct, accident, and observation laid the first foundations of the scientific edifice, or rather furnished the first materials; reason came next, to polish, cull, and arrange these materials in a suitable manner, and direct observation in the search for new facts.

"Thus far, reason had marched in the rear of experience, or by its side, performing the office of censor or architect, but it did not precede it; it did not pretend, especially, to create itself the material which should serve in the construction of the monument of medicine. But philosophy soon allowed itself to creep upon the steps of observation, which furnished it but too slowly with vague, limited, and very variable information. The philosophers abandoned the long and tortuous path of experience, believing they could reach their aim more speedily and directly on the wings of intelligence, free from the weight of the senses. The certainty and invariableness of mathematical propositions, the grandeur and beauty of the maxims in morals and natural religion, admirable discoveries, the foundation of all social order, which were regarded as the fruit of the pure perceptions of the mind—these were the motives, very excusable, doubtless, on which they rested, to turn from observation, and seek by the aid of pure mental intuition, the laws which regulate physical phenomena.

"From that time, physicians proposed nothing less than to determine the proximate cause, the principle, the essence of life and diseases, and the intimate action of remedies. They assumed to build upon this basis the scientific monument of Medicine. The more, then, objects appeared to them removed from the grasp of the senses, the more they judged them proper to become a solid foundation for science—one that would be undisturbed by the fluctuations of experience, a mode of acquisition which Hippocrates had qualified as uncertain, *experientia fallax.* Thence sprung up a crowd of hypotheses and systems, which struggled for supremacy in medicine, from Hippocrates to Galen. Their founders flattered themselves to be able to avoid the uncertainty and gropings of experience, but they fell into a labyrinth of imaginary speculations, and opened an illimitable field to controversy. Physicians were divided, like the philosophers, into rival sects, whose disputes only ceased in consequence of political events, and social revolutions. It was during these conjunctures that the physician of Pergamos, having collected what he found best in the writings of his predecessors, composed from them a body of doctrine, conformed to the reigning philosophic ideas, in which we meet, in some degree, all the opinions that had been in vogue, but over which Hippocratic dogmatism predominates.

"The scientific monument of Medicine thus constituted, traversed the *second age*, without undergoing any notable change. The theories of Galen were authority during all this lapse of time; his successors aspired only to the glory of interpreting them, and to add some particular facts, some observations of detail, to the heritage that antiquity had left to them. There was established, we do not know at what epoch, a strange, but salutary opinion, which formed a line of demarcation, a species of antagonism between theory and practice, between reason and experience. The theorist, it was said, must proceed according to logic, and the practitioner must be guided by observation. By means of this singular expedient, or this fiction, false theories and a deceptive science, were preserved for centuries without misleading practice too much; the physician could reason badly, without much injury to his patient, and without depriving himself of the lights of experience.

"Such is the aspect which medical doctrine presents at the commencement of the *age of renovation*, and even for a long time afterward. We have seen that at this epoch the human mind awoke from its long torpor, and signalized its revival by numerous discoveries and improvements. Astronomy, physics, chemistry, and natural history underwent a complete revolution, for which they were indebted to the direct observation of phenomena, and the adoption of a logical method, formerly scarcely used, called *induction*. The mathematicians who were never led astray in their abstract speculations, and who had made such beautiful discoveries, reasoning by *deduction*, preserved this logical method, always clearer to meditative minds than to observers.

"The philosophers were divided into two classes—one, including Descartes, Leibnitz, Kant, and their disciples, considered, above all, the activity of the soul in the acquisition of knowledge, and the production of moral acts; they were called *spiritualists*, and remained faithful to the ancient form of reasoning, *deduction*, after freeing it from the pedantic dress of the schools. The other, including Bacon, Locke, Condillac, and their followers, rather regarded the soul as passive, and assumed that all its faculties, and all its acts are derived from sensitive impressions; they are called, on this account, *sensitists*, and adopted, for their general mode of reasoning, *induction*, which they strove to introduce into all the sciences." "The greatest number of physicians adopted the sensitive philosophy. They all pretended to take the sensations, or the sensible phenomena, for the basis of their systems, but all, or nearly all, surpassed, in their theoretic speculations, the horizon of these phenomena, in which they violated that axiom of modern philosophy, common to sensualism and spiritualism—*reason has only been given to us to guide experience, and the mind, in attempting to pass the limits of the sensations, mistakes its right and its power;* hence the chimeras and instability of recent medical theories; hence, also, the necessity of prolonging, indefinitely, the divorce of theory and practice, of reason and experience—a divorce which the greatest practitioners of the last centuries have often proclaimed—a divorce whose inconveniences Baglivi was the first to signalize—which Werthof, Morgagni, and Lieutaud, with a small number of other writers, attempted to break, but which will only completely cease when all physicians shall be penetrated with this truth—that beyond *rational empiricism* there is for science nothing but illusion or hypothesis.

"We have demonstrated that all systems of medicine should be based on therapeutics, which is contrary to the common opinion—for all authors who have been authority, from the successors of Hippocrates to the present epoch, all, I say, excepting the empirics, have endeavoured to found their systems on the laws of physiology." "The authors of these theories have reasoned as follows: To treat a disease properly, we must know its nature. Now the disease being nothing else than a derangement of health, or the physiological state of the body, it is necessary to know in what health consists, in order to appreciate the derangements which take place—that is to say, the diverse pathological states. This reasoning, which appears so just and so natural at first sight, is at bottom only an extremely subtle sophism, which clinical experience contradicts at every step. There is a crowd of diseases whose nature, or mode of formation, escapes entirely our researches, yet which we know very well how to cure—there are others, whose mode of formation is much better known to us, on whose nature we have more exact data, whose treatment is, nevertheless, but little improved thereby."

"To those who pretend to deduce the general rules of treatment from some opinion, or physiological experiment, we would recall the axiom of philosophy already invoked by us more than once: *In the succession of natural phenomena, nothing presents to us the idea of causality, or the necessary relation of cause and effect. But when the succession of one phenomenon after another is constant, the human mind, which observes it assiduously, and which often can foresee it even, is led to believe that these phenomena succeed each other because they are linked together.* Thus, when the cure of an order of diseases follows constantly the employment of a medication, we are led to regard this medication as the cause of the cure which follows its use; but it is impossible for us to perceive the physiological reason of this result, and it is consequently useless to seek it.

"The physiologist must limit himself to describe the functions of the organism, without pretending to seize the proximate cause of these functions; while he does not content himself with depicting the phenomena of the animal economy as they are shown to us by observation, but flatters himself to be able to determine, by analysis, the *principle*, or *essential* phenomenon of living beings, he mistakes his rights as well as his powers. He resembles the dog in the fable, that dropped the substance to seize the shadow. He forgets that life is a finished circle, in which, consequently, there is neither commencement nor end. He, alone, who traced this circle, is able to tell us where it commences and where it ends. The man who struggles to resolve this problem, makes greater proof of folly and unmeasured ambition than of depth of mind. Far from being able to determine the principle or essential phenomenon, the object of so many vain speculations and researches, the physiologists have not even been able to assure themselves, by the most delicate observations, if life commences in the solids or liquids; for wherever life exists, we find a combination of liquids and solids, an assemblage of containing parts and parts contained—we cannot even conceive of life without this union." "Thus, therefore, the physiologist must limit himself to the description of the normal phenomena of the living economy—the pathologist to abnormal ones, without either of them aspiring to penetrate the primitive mechanism of these phenomena. So, also, the therapeutist should base the choice of the curative means he employs, not on the analogies perceptible to the understanding only, but on the material and sensible analogies. Such is the *resumé* of the empiri-methodic doctrine, toward which the present generation manifestly inclines, notwithstanding some divergencies. It does not require a great prophet to foresee that before a long time shall have elapsed, all medical opinions will unite upon this doctrine. Do we not see researches on specific medications everywhere multiplied? Does not our age owe to this order of researches the discovery of some precious remedies for diseases, and the improvement of several others? To recall but the principal ones, we will cite the extension of the application of the febrifuge, *par excellence*, to all periodic affections; the propagation of vaccination in spite of all physiologic theories; the introduction of iodine and its compounds in the treatment of scrofula and constitutional syphilis; the employment of ergot in inertia of the uterus, and hemorrhages that follow accouchement, the use of tartar emetic in certain forms of pneumonia, etc. etc. Are these not results which speak stronger in favour of the specificity of certain remedies than the sophisms and eloquence of writers who strive to lead the mind in another direction, by taxing as irrational a mode of treatment unanimously recognized as the most efficacious and beneficial? The research for occasional and predisposing causes, that is to say, causes called evident, by the ancient empirics, is it not preferred in some recent books to the research of causes called intimate, constitutive, physiological, and essential? From all these signs, it is easy to foresee that the definite triumph of empiri-methodism, otherwise called rational or philosophic empiricism, approaches.

"But let happen what will, the first among moderns, I have endeavoured to revive the name of the grand empirical school of Alexandria. I have endeavoured to resuscitate and cause to shine in greatest brilliancy its claims to glory, forgotten or mistaken for two thousand years. I have not been content to reproduce this doctrine; I have sought its enlargement and consolidation, by basing it on new philosophic dogmas of incontestable evidence, sustaining it by historic proofs, sufficient to fasten conviction upon the most resisting minds."
D. F. C.

Art. XXI.—*Principles of Human Physiology, with their Chief Applications to Psychology, Pathology, Therapeutics, Hygiène, and Forensic Medicine.* By William B. Carpenter, M. D., F. R. S., F. G. S., etc. etc. A new American from the last London edition. With two hundred and sixty-one illustrations. Edited, with additions, by Francis Gurney Smith, M. D., Professor of the Institutes of Medicine in the Medical Department of Pennsylvania College, etc. 8vo. pp. 902. Philadelphia: Blanchard & Lea, 1855.

In the present edition of Dr. Carpenter's work on human physiology, many important changes have been introduced, in regard, as well to the form of the treatise, as to the matter of its several chapters; it may be looked upon, therefore, somewhat in the light of a new work. The size of the treatise was already so great that, when the additions should be made to it, which the progress of science demanded in order to render it a fair exponent of the present state of physiology, its bulk would become unwieldy and inconvenient, and render it unfit for the use of the student, or as a work of frequent reference to others. The author was, in consequence, induced to transfer so much of the last edition as was devoted to a summary of animal chemistry, and of the structure and actions of the animal tissues, amounting in all to some 240 pages, from the present treatise to the one on general physiology; thus rendering the latter more comprehensive and complete in itself, as well as a more appropriate companion either to the comparative or to the human physiologies of the author. The three works constituting henceforth "as many *independent* but *mutually connected* treatises, on the three great departments into which modern physiology naturally divides itself."

Whatever may be the regret experienced at the omission from the treatise before us of the subjects alluded to—there was no other plan left by which the volume could be kept within reasonable limits as to bulk, and at the same time permit the incorporation into it of the seventy pages of new matter, embracing the recent additions that have been made to our knowledge of human physiology.

Every portion of the work presents evidence of careful revision, while many of the chapters have been entirely re-written, so as to render it throughout "a faithful reflection of the present state of physiological science."

The American editor has added an occasional illustration of the author's text, and notices of such discoveries as have been announced subsequently to the issue of the work in England—thus bringing it up more fully to the present day. With Dr. Smith, we confidently believe, "that the present will more than sustain the enviable reputation already attained by former editions, of being one of the fullest and most complete treatises on the subject in the English language." We know of none from the pages of which a satisfactory knowledge of the physiology of the human organism can be as well obtained, none better adapted for the use of such as take up the study of physiology in its reference to the institutes and practice of medicine. D. F. C.

Art. XXII.—*History of the American Medical Association from its Organization up to January*, 1855. By N. S. Davis, M. D., Professor of Principles and Practice of Medicine, and Clinical Medicine in Rush Medical College, etc. etc. etc. *To which is appended Biographical Notices, with Portraits of the Presidents of the Association, and of the Author.* Edited by S. W. Butler, M. D. 8vo. pp. 191. Philadelphia: Lippincott, Grambo & Co., 1855.

Whether the American Medical Association is destined to be a permanent institution, that, after having by perseverance accomplished the primary objects of its organization, shall continue a bond of union and of strength, for the protection of the rights and the furtherance of the interests of the medical profession throughout the United States—increasing in dignity, influence, and efficiency with each year that is added to its age, or whether from some unforeseen and unanticipated cause it shall, sooner or later, cease to exist, still must its organization and its doings ever form prominent and most interesting items in the history of our profession in this country.

Long or short lived as the Association may be, it has already given a proper direction to many of the things that most deeply affect the prosperity of our profession, and has made upon it, throughout, an impression, the salutary influence of which cannot be easily or speedily counteracted.

It is true that, in its attempts to work out the problem of reform in medical education, it has been encountered by contending and discordant interests, which it has not yet been able to conciliate; and yet, even in this department of its operations, facts incontestably prove that its efforts have not been without a beneficial result—far short, unquestionably, of what was anticipated from them, in the outset, but still sufficient to create the hope that, by steady perseverance, the Association may ultimately succeed in the entire accomplishment of all its plans of reform.

Look upon it in whatever light we may—as an experiment destined to end in a total failure, or as an organization the operations of which have been so far beneficial, and are destined to become still more so in the future, the history of the American Medical Association is, and always will be, a subject of deep interest to the American physician, and we are therefore pleased that Dr. Davis, whose name is identified with the Association from its origin—has undertaken the task of recording its history, which he has accomplished with great ability and perfect impartiality.

As the work of Dr. Davis has doubtless found its way, before this, into the hands of the major portion of our readers, it is unnecessary for us to enter into an examination of its contents. The author presents a plain, unvarnished narrative of the causes which led to the organization of the Association, and of its proceedings—the subjects discussed, the plans digested, and the recommendations and suggestions adopted, at its several sessions, from the preliminary meeting in 1846, to that of May, 1854, inclusive. In an appendix, short biographical notices are given of the eight gentlemen who have served as Presidents of the Association, and of its historian.

We would say to those who have not yet become possessed of the work before us, to do so without delay, and give to it a careful perusal; for we are desirous that every medical man in the country should become acquainted with the character and doings of the Association, as we would wish to enlist every one on its behalf, as well for the general benefit of the profession at large, as for that of each of its members individually, and we know of no more certain means of effecting this than by promoting the circulation of Dr. Davis's history. D. F. C.

Art. XXIII.—*The Obstetric Memoirs and Contributions of* James Y. Simpson, M. D., F. R. S. E., Professor of Midwifery in the University of Edinburgh, etc. etc. Edited by W. O. Priestley, M. D., Edinburgh, formerly Vice-President of the Parisian Medical Society, and Horatio R. Storer, M. D., Boston, U. S., one of the Physicians of the Boston Lying-in Hospital. Members of the Medico-Chirurgical and Obstetric Societies of Edinburgh, etc. etc. etc. Vol. I. 8vo. pp. 756. Philadelphia: J. B. Lippincott & Co., 1855.

This is a very acceptable work. Although the greater portion of the memoirs and contributions embraced in it have already appeared, at various times, in the British journals of medicine, and several of them have been copied into those of our own country, yet, taken as a whole, they constitute so valuable and important a contribution to obstetric pathology and practice, that it was desirable they should be collected and arranged for their presentation in a form that would render them acceptable to the members of the profession generally.

The character and standing of Professor Simpson as an obstetrician, and his experience in the treatment of the diseases peculiar to the female, have given to his opinions, on everything connected with the conduct of labour, in the varied circumstances under which it may occur, as well as with the pathology and management of the various affections of the reproductive organs of woman, an authority not surpassed by any previous or contemporary writer on those subjects. With these opinions every American practitioner must desire to be acquainted, which desire the collection of the professional writings of that gentleman, and their presentation in their present permanent and accessible form, will enable them to satisfy.

The several memoirs and essays included in the present publication have been republished under the immediate supervision of Dr. Simpson—two or three of the older papers have been almost entirely rewritten by him. Besides those that have already appeared in the medical journals, the collection will also contain a number of entirely new contributions.

The papers, in place of being arranged in the order of their original publication, are classified according to their subjects. The present volume comprises those having relation to the special pathology of the unimpregnated female, to the physiology and pathology of pregnancy, and to natural and morbid parturition.

Under each of these heads will be found papers of deep interest and great practical importance. The entire collection is deserving of a careful perusal on the part of every practitioner engaged in the general duties of his profession.

The junior editor, Dr. H. R. Storer, of Boston, in the preface to the American edition of Dr. Simpson's professional papers, enumerates, as the most important of that gentleman's contributions, the proposition to extract the placenta before the child in certain cases of placenta prævia; the use of alkaline salts in placental phthisis; the operation of turning as an alternative for craniotomy; the use of anæsthetics in labour; the sound in uterine diagnosis; the treatment of displacements by intra-uterine pessaries; the incision of the cervix uteri in obstructive dysmenorrhœa; and the employment of sponge tents to expose intra-uterine polypi.

It is proper to remark that notwithstanding many of these propositions command the assent and confidence of a large proportion of the medical profession, their value and propriety have been and still are doubted by a respectable number of those whose ample experience and sound judgment give to their opinions no trifling authority. It is not, however, our intention on the present occasion to enter into an examination of the exact value of either of the contributions upon which Dr. Simpson's American editor bases his claim to our consideration, nor to test the weight of the objections that have been brought against them. The good sense and practical tact of the physicians of the United States will soon enable them to arrive at just conclusions in regard to the worth of those contributions. Unbiassed by any feelings of rivalry towards their author on the one hand, or of partisanship for or against him on the other, we have no fear to trust to the impartiality and correctness of whatever verdict they may ultimately render. D. F. C.

Art. XXIV.—*Manual of the Practice of Medicine.* By George Hilaro Barlow, M. A. and M. D., Cantab, Fellow of the Royal College of Physicians, Physician to Guy's Hospital, to the Magdalen Hospital, and to the Philanthropic Society. With additions by D. Francis Condie, M. D., author of *A Practical Treatise on the Diseases of Children*, &c. &c. 8vo. pp. 608. Philadelphia: Blanchard & Lea, 1856.

The object which the author had in view in the preparation of the manual before us he has most successfully accomplished. It was, as he informs us, to lay before his professional brethren, more particularly students and younger practitioners, a comprehensive system of medicine based upon the etiology of disease—using the term etiology in its widest signification—or, as Dr. Barlow would venture to express it, upon the natural history of the several morbid conditions of the human body.

As a well digested manual of the practice of medicine, it will compare favourably with any of the same class that have preceded it, while as a handbook for students, to prepare them for the study of disease as delineated in the more extended systematic treatises or monographs, and at the bedside of the sick, it stands pre-eminent.

Though the subjects embraced in it are presented only in their leading outlines, yet these outlines are so broadly drawn and well defined, that they convey a very correct representation of all the important pathological and therapeutical facts and principles in relation to each of the diseases of which the author treats.

Not only will the manual of Dr. Barlow become a safe guide to the student in his preliminary investigation of practical medicine, by the fidelity of its descriptions of diseases, and the general soundness of its pathological doctrines and of the practice which it inculcates, but also by the careful endeavour which is evinced throughout it to connect the diagnosis of disease, as well as its remedial management, with general principles, without the constant recognition of which at the bedside the practice of medicine cannot fail to degenerate into empiricism.

The principal additions made by the American editor are a chapter on cholera infantum, another on cerebro-spinal meningitis, and a third on yellow fever; these unquestionably enhance the value of the work, especially for the use of the students and younger practitioners of this country. D. F. C.

Art. XXV.—*Physiological Chemistry.* By Prof. C. G. Lehmann. Translated from the second edition. By George E. Day, M. D., F. R. S., F. R. C. P., and Professor of Medicine in University of St. Andrews. Edited by R. E. Rogers, M. D., Professor of Chemistry in Medical Department of University of Pennsylvania. With illustrations selected from Funke's Atlas of Physiological Chemistry, and an Appendix of Plates. Complete in two vols. Philadelphia: Blanchard and Lea, 1855, pp. 648 and 547.

The medical press has been so prolific during the past three months, that we find it impossible to do justice, in our present number, to all the works which have been placed on our table, and are compelled to postpone a notice of some of them until a future occasion. We must not, however, allow this opportunity to pass without at least calling the attention of our readers to the valuable treatise of Professor Lehmann, constituting as it does the most important contribution as yet made to physiological chemistry.

In our next number, we hope to be able to give a particular account of the work, and in the mean time may state, in the words of the editor, that "the high reputation of Prof. Lehmann as a chemist and experimental physiologist, the well-known competency of the translator, and the established character of the Cavendish Society, under whose auspices it has appeared in England, furnish an ample guarantee of the pre-eminent value of this work, as well in regard to its practical details as its speculative character.

"These testimonials to its excellence are sufficient to commend it to the student as the most accurate and thorough work of reference on the subject of Zoo-Chemistry, to the medical practitioner as a valuable guide in the solution of many of the difficult questions in which he is interested, and to the experimental inquirer, who, in his endeavours to extend the boundaries of knowledge, feels the want of such a critical and complete exposition of what has been already determined."

QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES

IN THE

MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

1. *Intimate Structure of the Retina, and Connection of its Elements.*—PROFESSOR JOHN GOODSIR, of Edinburgh, in a recent lecture, after a brief statement of the general aspect and the more obvious anatomical relations of the retina, gave an interesting description of the intimate structure and connection of its elements, as they are arranged in the membrane from without inwards.

These elements are most satisfactorily examined in microscopic sections made at right angles to the surface of the membrane, after maceration in dilute solution of chromic acid. Viewed in this manner, it exhibits from the peripheral to the central margin of a successful section a series of strata, which may be distinguished as the bacillary, white cellular, gray cellular, filamentary, and limitary layers.

The bacillary layer consists of two kinds of bodies—the rods and cones. The rods are cylindrical or prismatic, with extremities transversely truncated, transparent, and of extremely delicate texture. The cones only differ from the rods in having their inner third, or two-thirds, pyriform. These are arranged close together at right angles to the outer surface of the retina, with their external extremities applied against the inner surface of the choroid. Throughout the greater part of the retina the rods predominate, the cones being uniformly interspersed. In the neighbourhood of the yellow spot, the cones become more frequent; and in the spot itself, they alone constitute the bacillary layer.

The transversely truncated inner extremity of each of the rods is connected with the deeper structures of the retina, either by a conical appendage, which tapers inwards in the form of a filament, or by an ovoidal appendage, which also transmits a filament inwards. The inner extremity of each of the cones is terminated by a pear-shaped appendage, containing a nucleus, and having its stalk prolonged inwards, like the filaments of the rods.

The white cellular layer is composed of three strata—an outer, an intermediate, and an inner. The outer consists of the ovoidal nucleated appendages of the cones; of the ovoidal appendages of the rods which have such bodies attached; and of similar bodies in which the conical appendages of the other rods terminate. The intermediate presents a semifluid granular basis, through which numerous filaments pass from the outer into the inner stratum, in a direction perpendicular to the surfaces of the retina. These filaments, which issue from the outer stratum, are, firstly, the prolongations of the filaments which proceed from the nucleated appendages of the cones; secondly, the prolongations of the filaments which proceed from the ovoidal appendages of the rods possessing such; and, thirdly, filaments proceeding from the inner extremities of the ovoidal bodies, which are connected with the filamentary terminations of the conical appendages of the other rods. The inner stratum also consists of two sets of ovoidal bodies, each of the first connected with some one of the prolongations of the filaments of the cones, and giving off, at its opposite end, a similar filament; while those of the second set, similarly formed and provided, are connected with the prolongations of the filaments of the rods.

Towards the circumference of the retina, many rods may be found, connected by the filaments proceeding from their ovoidal bodies with a single filament passing into the inner stratum. This connection never occurs between the filaments of the cones, which are thus invariably independent of one another.

There may generally be found a branch passing obliquely inwards from some part of the filament of the cone and rod, in its passage through the intermediate stratum, or from the ovoidal bodies of the inner stratum.

The gray cellular layer consists of a fine granular basis, such as may be seen in many parts of the brain; of numerous cellules, with distinct nuclei, nucleoli, and two, three, or four radiating and branching prolongations, as in the cerebrospinal axis; of numerous bloodvessels; and of prolongations of the filaments of the rods and cones, passing inwards to the inner surface of the retina. It is extremely probable that the nucleated cellules of this layer are connected by certain of their prolongations to the filaments of the rods and cones; the prolongations of the former being continuous with the branches of the latter in the white cellular layer. It may also be confidently stated that, by means of others of their prolongations, the nucleated cellules of this layer are connected with the ultimate filaments of the optic nerve, which form the next layer of the retina.

The filamentary layer is composed essentially of the ultimate filaments of the optic nerve. These filaments, as soon as they pass off from the spot, enter the retina, lose their medullary sheath and dark margins, and assume a delicately transparent gray tint, and somewhat varicose form. They radiate in gradually diminishing anastomosing bundles all round; but, on the outer side of the optic nerve, they sweep in curves from above, and from below to a line which passes from the centre of the nerve outwards through the yellow spot, converging at the same time somewhat towards that spot. The terminations of the constituent filaments of this layer are probably all continuous with certain of the radiations of the nucleated cellules of the gray cellular layer. The meshes formed by the bundles of this layer afford passage inwards to the continued prolongations of the filaments of the rods and cones.

The limitary layer completes the retina on the inner side. It is an extremely thin, perfectly transparent membrane, which, although continuous throughout, can only be detached in minute portions, in connection with the terminal attachments of the filaments of the rods and cones; which terminate on its outer surface by expanding into conical brushes, or still more minute threads, which would almost appear to constitute the membrane itself.

At the entrance of the optic nerve, the bacillary, white cellular, and gray cellular layers, are necessarily absent; the limitary membrane alone covering the inner surface of the mass of nervous filaments, which, with the arteries, spread out on all sides.

Over the macula lutea the bacillary layer consists of cones alone, the filaments of which do not reach the limitary layer, at least at the fovea centralis, but terminate in the white cellular layer. The latter exists, except at the fovea. The gray cellular layer is distinct throughout; but towards the centre, and at the fovea, its granular stratum is deficient, the nucleated cellules being crowded together under the limitary layer. The filamentary layer is deficient as a lamina, over the entire macula lutea; but its constituent filaments may be detected in the midst of the nucleated cellules of the spot. The peculiar yellow pigment is diffused through all the textures, with the exception of the bacillary layer.

The structure of the retina is so delicate, and its investigation so difficult, that much remains still to be determined regarding the precise connection of its different elements. The structure of the bacillary layer having been more particularly examined by Gottsche and Hannover, and the white cellular layer by Bowman, Pacini traced the filaments inwards from the rods and cones into the white cellular layer. The discovery of the filaments themselves, and their passage inwards to the limitary layer, is due to Heinrich Müller, by whom, along with Kölliker, the general anatomical connections of the microscopic elements of the retina have been more particularly traced. According to H. Müller and Kölliker, the rods and cones are connected by what may now be denominated the Müllerian filaments to the limitary membrane; the various bodies which constitute the white cellular layer being connected with these filaments in the manner already described. The branch which proceeds from each of the Müllerian filaments in its course through the inner stratum of the white cellular layer becomes continuous with one of the radiations of one of the nucleated cells of the gray cellular layer; all the cells of this layer, therefore, being connected with all the rods and cones of the retina. The remaining radiations of the cellules of the gray layer passing inwards, form the commencements of the ultimate filaments of the optic nerve in the filamentary layer of the retina.

In reference to those parts in the structure of the retina upon which that impression is made, which when conveyed to the sensorium terminates in the perception of light, it may be stated, that the non-sensibility of the retina at the entrance of the optic nerve, and its perfect sensibility at the macula lutea, as well as other considerations, prove that this function is not performed by the filaments of the nerve.

Kölliker concludes, by exclusion of the other elements, that the rods and cones, with the Müllerian filaments, are the structures on which objective light first impresses itself. He believes the seat of this impression to be in the rods and cones, and also probably in the inner ends of the Müllerian filaments. He has examined with great care the chemical and structural characters of these bodies, and has satisfied himself that they are nervous structures.

Brücke and Hannover conceive the rods and cones of the bacillary layer to be structures which reflect the light back again from the outer surface of the retina against the filamentary layer, on which it is thus impressed. Helmholtz, again, who does not admit the sensibility to light of this layer, believes the reflected light to act upon the gray cellular layer.

After having given an account of the observations and views regarding the structure and functions of the retina, which have been published within the last few years, and of which the foregoing is an abstract, Mr. Goodsir concluded the lecture by a short statement of his own opinions on the subject. Having carefully examined the retina with these observations and views before him, he has succeeded in verifying the majority of the structures and relations described by Müller and Kölliker; but he cannot coincide with the latter in opinion, that the rods, cones, and Müllerian filaments are nervous structures. They have neither the general aspect nor the anatomical relations of mere nervous textures. Each rod or cone, with its Müllerian filament extending inwards to the limitary membrane, with the ovoidal bodies developed on it, would appear referable rather to the class of structures to which the touch-corpuscles and Pacinian bodies belong. They are structures developed around the extremities of the ultimate filaments of the optic nerve, for the purpose of placing those extremities in the necessary position and circumstances for being impressed by the rays of light. The ultimate nerve-filament enters the Müllerian stem of the rod or cone as it passes through the white cellular layer. This filament is probably, as has been stated, a radiation from one of the gray cells, which if they be collectively connected to all the rods and cones, as well as to the filaments of the optic nerve, may safely be considered, as Kölliker has pointed out, to be a retinal ganglion, intermediate between the sentient points of the retina and the sensorium, as well as between the corresponding points of its own and of the opposite eye. The ultimate nerve-filament, as it enters the Müllerian stem obliquely outwards, probably terminates towards, or at the extremity of the rod or cone, so as to have its transverse section directed outwards at right angles to the axis of the rod or cone. Let it now be assumed that a ray of light cannot impress an ultimate optic filament, except it impinge upon the free extremity in the axis; that is, at right angles to the transverse section; and let it also be admitted with Brücke and Helmholtz, that it is by light reflected from the bottom of the eye that vision is affected, then the theory of the retina in primary vision becomes more consistent. The divergent pencil of light which proceeds from any visible point to the eye, becoming convergent after having entered the refractive media, passing through the perfectly transparent retina, is probably brought to a point at the surface of the choroid or outer part of the bacillary layer of the retina, and is not entirely absorbed there, but is reflected as a divergent pencil. In passing towards the point of reflection, the rays of the pencil cannot impress any part of the retina, because they cannot impinge on any of its nervous elements in the only manner in which these can be affected, viz: against their free extremities at a right angle. Certain of the rays, however, of the reflected pencil, viz: those which pass along the axis of a rod or cone in the bacillary layer, will impinge in the proper direction on the contained nerve, and produce the luminiferous impression. No confusion, therefore, can result from the multitude of convergent and divergent rays which are passing through the chamber of the eye, and through the retina, for those only are capable of impressing which are reflected along the axis of the cones and rods. The human sensorium receives from the retina the impression of a picture which is not continuous, but made up of detached points; as in the vision of the insect, which only sees an object by as many points as can transmit rays along the axis of its eye tubules.

Mr. Goodsir is of opinion that the bacillary layer of the retina belongs morphologically to the transparent humours of the eye. The original bulb of the eye, whether it be a mere process of the brain, or, as he is inclined to believe, partly a pulp developed on the tegumentary membrane, forms over its entire free surface transparent (cuticular) structures. That portion of the free surface of the pulp which is directed towards the orifice of the eye follicle, develops the lens, the cornea, and the vitreous humour. That portion, again, in contact with the inner surface of the follicle and which becomes choroid, develops the bacillary layer with its rods and cones. As the lens and vitreous humour increase in size, the pulp or retina becomes cup-shaped, and intermediate between the two portions of the transparent structure developed from its original spheroidal surface.—*Edinburgh Med. and Surg. Journ.*, Oct. 1855.

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2. *Histology of the Retina.*—Remak describes the structure of the retina at some length.[1] He states, that next to the "membrana limitans," extend, in the direction of the meridian of the eyeball, the textural fibre fasciculi. In the interval are crowded thickly placed multi-polar ganglion cells, which belong to the cell-layer existing on the outside of the optic nerve-layer. One may then discriminate, on the inner surface of the retina, fibrous and gangliated meridians. The branched projections of the ganglion cells have the properties of nerve-fibres, and unite with the third very thick fibrous layer, from which exceedingly delicate varicose fibres, like the fasciculi of the optic nerve, run from behind forwards. On this fibrous layer follows again a layer, consisting of small multi-polar ganglion cells, which in many places is separated by a very thin fibrous layer from the so-called granular layer. In the last one, neither nerve fibres nor ganglion cells appeared. It consisted of nuclei-holding fibres, arranged in a radial direction, which, on their extended nucleus-holding outer surface, are beset with the well-known little rods and pegs. Projections of these fibres pass through the layer of the retina in a radial direction, and form, by means of broader thickly crowded anastomosing enlargements, the "membrana limitans," without ever affording a resemblance to, or connection with, the nerve fibres. These radiating fibres, discovered by H. Müller, appear, like the limitary membrane from which they proceed, to serve the retina as a support. In the district of the "yellow spot" there run, according to Remak, the layers of the retina, consisting of nerve fibres and ganglion cells in a gangliated sheet, formed by multi-polar ganglion cells, whose thinned, pitcher-shaped, central part (*fovea optica*) in the sound eye of a boy, appeared to be perforated by a fissure. Up to this cavity a very thin projection of the inner fibrous layer passed, but here ceased the radiating fibres of Müller. The ganglion cells were

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[1] Deutsche Clinik, No. 16: quoted from Canstatt. 1854.

surrounded by firm sheaths, from which proceeded the short stems of the pegs existing on the outer side. Between the above-named cavity and the choroid is a substance of deep yellow colour, clear as glass. In the other parts of the spot, the stems of the pegs are very long and twisted, and, as it appeared, form a thick, very yielding cushion, upon which the gangliated lamina rested.

For Kölliker's observations on the extension and termination of the cochlear nerve of the ear, in which, to a certain extent, he agrees with Corti of Turin, see his Histology.

Wagner[1] considers that all so-called a-polar cells do not exist as such, but that, in all cases, excepting, perhaps, in those of the heart, about which there was doubt, they were mutilated bi- and multi-polar cells. He also considers that uni-polar cells in the brain and spinal cord are doubtful. Many apparently bi-polar cells in the brain he recognized as multi-polar, and he looks on the granular material between the cells as a bed for bloodvessels, and also as a matrix for the formation of new ganglion cells. The union of the ganglion cells described by him in the electric apparatus of the torpedo, could not be found by Remak, who asserts that the cells are all multi-polar, and that their processes partly enter into the roots of the electric nerves, and partly into the spinal cord. The cells in spinal ganglia were found by Remak to be bi-polar; but in the sympathetic ganglia they were multi-polar, with from three to twelve processes. They were more numerous in the solar plexus than in the terminal ganglia. In these ganglia, the bi-polar cells differed from those in the spinal ganglia, by the branching of both processes, so that they were equivalent to multi-polar cells.—*B. & F. Med.-Chirurg. Rev.*, Oct. 1855.

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3. *Histology of the Cornea, Lenses of the Eye, &c.*—The presence of a true liquor Morgagni during life, which is denied by Kölliker and others, is asserted by Lohmayer.[2] Kölliker attributes the appearance of a layer of polygonal cells at the back part of the crystalline lens under the capsule, to club-shaped enlarged and flattened ends of the lens' fibres, which are inserted into the inner surface of the capsule, and often leave delicate impressions behind them; and in the same way, the abrupt terminations of the fibres of the lens exist behind the equator of the lens.[3] Kölliker also asserts that the fibres of the lens are, in fact, tubes, which Reichert[4] thinks cannot be the case, from the completeness with which, on drying, their peculiar polyhedral character is retained. He imagines the fine and longitudinally striped character which they have to be owing to a folding of their membrane, probably. In the neighbourhood of the equator, the nuclei of the original cells of the tubes, having grown into vesicles with nucleoli, remain in the centre of each tube. Kölliker says that, in the central stelliform figures of the lens, its substance does not consist of tubes, but is partly granular and partly homogeneous; and the surrounding tubes gradually lose their distinctness on approaching the central "stars." The vitreous body is described by Doncan[5] as consisting of four kinds of elements: 1. A peripheric layer of cells, strongly refracting light. 2. Very fine fibres, covered with granules, which were situated more at the sides than in the axis of vision. 3. Numbers of granules, of various sizes. 4. Folded membranous shreds in the anterior part of the vitreous body. The cells, which are identical with those described by Luschka, and considered by Brücke to be undeveloped capillary network in the fœtus, fill the entire vitreous body, and disappear from the centre. Those existing at the periphery are looked upon by Doncan as the result of a colloid or mucin-like metamorphosis of the contents, especially the nucleus; and he thinks that the vitreous humour is developed from these cells, which, partly by bursting, and partly by the act of transudation, furnish the fluid. Doncan also thinks the textural parts, the fibre's granules, membranous shreds, &c., to be the result of secondary formations in the mucus, formed by

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[1] Neurologische Untersuchung. See Canstatt, p. 61. 1854.

[2] Zeitschrift für rat. Med., Band v. Heft. 1, p. 56.

[3] Zeitsch. für Wissench. Zool., Band vi. Heft. 1.

[4] Canstatt's Jahresbericht, p. 34. 1854.

[5] Nederl. Lancet, Nos. 11, 12: see Canstatt.

such cells. According to Hannover (Canstatt), the vitreous body in man consists of sections like an orange, formed by projections of the hyaloid membrane, converging to the centre. Doncan, however, in examining recent specimens without reagents, could see nothing of the membrane in question. He also used specimens hardened by acetate of lead and chromic acid, and in the human body found that the radiated striæ seen on section were owing to membranous septa, but were either indications of zones, as he thought probable from the arrangements of the embryonic cells, or were artificially produced. Kölliker thinks that the adult vitreous body consists merely of a mucus-like substance, all trace of the embryonic areolar tissue which it originally possessed being quite lost.—*Ibid.*

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4. *Structure of the Spinal Cord and Spinal Nerves.*—In an inaugural dissertation before the University of Dorpat, by Philip Owsjannikow, the author has entered at great length on the structure of the spinal cord and spinal nerves. The conclusions drawn from the observations were as follows:—

1. That all the fibres of the spinal nerves which enter into the spinal cord are united to gangliated cells.
2. That one filament extends to each gangliated cell from the anterior spinal root, and one from the posterior root; a third, a commissural one, from the other part of the spinal marrow; and in many fishes a fourth, passing from the brain. The presence of this single fibre passing to the brain, may, as the author throws out, be of moment in reference to the question of the possibility of the same fibre being both afferent and efferent in function, a position which Du Bois-Raymond thinks tenable, as judging from his experiments, though, as a rule, this power is not put into action, in his opinion. The author of the paper now considered, thinks, on the contrary, this aforesaid power is always put into use.
3. That from each cell of the spinal marrow, a filament extends to the brain, forming the white substance.
4. That the chief mass of the spinal marrow, containing fibre and cells, is a united areolar web, which being arranged in great abundance about the central canal, and furnished with numerous bloodvessels, produces the ruddy gray colour of the substance which is generally supposed to be owing to pigment cells.
5. That the gelatinous substance of Rolandi is connective tissue.
6. That the cells found as well in the posterior horns as in the surrounding substance of Rolandi, are corpuscles of the united web.
7. That the cylindrical axes are of a round form, and are composed of the same substance as the nervous cells.
8. That the cylindrical axes in the gray substance are formed of a membrane peculiar to themselves, which surrounding also the nerve cells, may be separated from the fundamental mass composed of the united web.
9. That in some fishes, the cylindrical axes of the spinal cord are exposed, the cellular web in which they are placed forming no especial investment.
10. That in those fishes which have anterior and posterior spinal roots, round gangliated cells are found, sending out in various directions divided branches.—*Ibid.*

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5. *Minute Anatomy of the Liver.*—The minute anatomy of the liver has been lately examined by Beale,[1] who, from his dissections and injections, comes to the following results:—

1. That the essential constitution of the liver is that of a double network of minute vessels, one of capillary bloodvessels, and another of cell-containing tubes, naturally adapted to each other. Both of these sets of tubes in each lobule appear to communicate with those of the neighbouring lobules in all livers excepting that of the pig; and this circumstance is connected with the fact, that in all other animals but the pig, the hepatic lobules are not isolated

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[1] Proceedings of Royal Society, June, 1855.

by intervening and limiting fibrous tissue or capsules. As to the latter position, Beale agrees with Weber.

2. That the cell-containing tubes are in all vertebrata continuous with the ultimate fine ducts of the viscus; in some cases directly so, whilst in others, as in the rabbit, and slightly in man and the dog, a fine network of the ducts themselves intervenes. The basement membrane of these tubes being, after fœtal life, incorporated with those of the capillaries, so that the secreting hepatic cells are only separated from the stream of blood by a single intervening membrane. The cell tubules contain the hepatic cells, as also granular and colouring matter and cell débris; the cells observing no order of arrangement, as some have thought, and contrasting in size, &c., greatly with the epithelium lining the ducts, from which they are strictly separated.

3. That the fine ducts are many times narrower at the point where they are continuous with the cell tubes, than those tubes themselves; and that the larger ducts and larger interlobular ducts freely anastomose with each other.

4. That whilst the finest biliary ducts are only composed of basement membrane, that of the larger ones is more complex, containing numerous cavities; especially in the pig, which, although generally considered to be glands, are in fact reservoirs for the bile, retaining it, and bringing it into intimate relation with the abundant surrounding bloodvessels, so that it may undergo requisite changes. This the author also considers to be the function of the vasa aberrantia, so named by Weber.

In this view, it will be seen that Beale considers the structure of the liver to be strikingly different from that described by Kölliker and Hanfield Jones, and assigns a different office to the secreting and epithelium cells; for, whilst the latter looks upon the cells of the ducts as chiefly forming the bile, Beale considers that they stand in relation to the hepatic cells as the columnar epithelium (lining the stomach tubes) does to the secreting cells at the bottom of them.

Beale prepared his specimens by injecting the portal vein with lukewarm water until the bile was washed out of the ducts by it, and then injecting the ducts; after which the portal vein was injected with size. The ducts were also examined in specimens hardened in alcohol, to which a solution of soda had been added, in order to render the sections transparent.

Dusch[1] finds that the hepatic cells are dissolved in bile and in solutions of glycocholate of soda. They also enlarge on the addition of chloroform, according to Lereboullet, their contents becoming very clear.—*Ibid.*

MATERIA MEDICA AND PHARMACY.

6. *On the Pathological and Therapeutic Effects of the Chloride of Ammonium.* —Dr. Alex. Lindsay has published (*Glasgow Medical Journal,* Oct. 1855), some interesting investigations on this subject.

So far, he says, as he is aware, the influence of medicinal doses of the chloride of ammonium (*sal ammoniac*) continued for a certain time in healthy individuals has not been recorded. He was anxious to ascertain this, and was aided in doing so by two intelligent pupils, who agreed to subject themselves with him to the action of the chloride.

"Daily, for a week previous to the experiment, the state of the appetite, the nature and amount of the food, the condition of the bowels, the frequency of the pulse, with the amount and density of the urinary secretion, were carefully noted. The medicine was then taken for a week, and similar observations recorded. The amount taken was in one case 18 grains per day, a second 13½ grains, and the third 9 grains. These quantities were divided into three equal doses, and were swallowed dissolved in two ounces of water. No comparison of the results was made till the observations were concluded. The following is a brief summary of these, from the notes now before me:—

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[1] See Canstatt.

"On the second day after beginning the medicine, a buoyancy of the system was experienced that rendered ordinary pursuits a pleasure, and fitted body and mind for increased exertion. The uniformity of this result was the more remarkable, as the experimenters represent types of the nervous, sanguineous, and lymphatic temperaments respectively. The feeling was least developed in the last. He employed the smallest dose. In all, the appetite was much improved. Where the smallest quantity of the salt was taken, the amount of food was doubled. The feculent discharges were in all much augmented. The mucous follicles of the intestinal tube seemed to be stimulated to a much increased secretion. In two, the force and frequency of the heart's action were diminished. The rate of the pulse in the gentleman employing the smallest dose was accelerated. In all, the chloride increased the urinary secretion. It cannot, however, be classed as a renal hydragogue. The increase of fluid ranged from six to twelve ounces in the twenty-four hours. In the two cases, where the largest and smallest doses were used, it acted as a renal depurant, the excess of solids varying from 70 to 160 grains daily. In the other no change in this respect was noticed; but it may be necessary to remark, that the effect on the bowels appeared to be greatest in the individual making use of the medium dose.

"The cases in which I have employed the chloride of ammonium in practice have been limited to chronic diseases, such as result from inflammatory action, or where there is a local ailment existing as the expression of a dyscrasial condition. Particularly, I have prescribed the salt in cases of chronic bronchitis, in enlargement of the lymphatic glands, whether resulting from scrofulous disease or dependent on a syphilitic taint, in chronic skin diseases, and in cases of chronic rheumatism.

"The chloride has been, I may remark, exhibited also in acute diseases; in some forms of fever, and in the milder cases of pneumonia.[1] Further, Dr. Watson, in his lectures, has testified as to its efficacy in certain forms of facial neuralgia;[2] and Dr. Ebden, in the Indian Annals of Medical Science for April, 1854, states that it is a powerful and valuable remedy for the relief of neuralgic pain generally. He writes: 'In facial neuralgia, tic douloureux, nervous headache and toothache, not excepting sciatica, and even in one case of neuralgic dysmenorrhœa, I have often given it, and been convinced, after a full trial, of its merits.'[3]

"Of its therapeutic effects in acute diseases, I have no knowledge, nor have I prescribed it in neuralgic affections; but, from what I have seen of its physiological action in small doses, I can readily believe that the quantities prescribed by Dr. Ebden must have had an important influence.

"I commenced the use of the salt in morbid conditions of the pulmonary mucous membrane, where the exuded (mucus) secretion was tough and tenacious. In such cases, its action was often remarkable, the exudate becoming speedily altered in quality and consistency. It has probably been from observing this effect that some have attributed to the chloride of ammonium qualities similar to the mercurial preparations. As liquefacients, their influence is well known. On this account they are frequently employed. But in cases in which their use is contra-indicated, as frequently happens in chronic bronchitis, I can confidently recommend that their place be supplied by the preparation under consideration, certain that if the case be well chosen, the benefit will soon be apparent, and equally certain that no prejudicial result will follow its employment. In this respect it differs from the alkalies or their carbonates, the prolonged employment of these disordering the digestive or assimilative functions, and ultimately producing a condition similar to scurvy, the nutrition of the body generally becoming impaired. It is very different with the chloride, its long-continued use never giving rise to symptoms of general cachexia. The testimony of many observers agree in this.

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[1] Neligan on Medicines and their Uses, p. 359, 4th edition.

[2] Watson's Lectures, 3d edition, p. 717.

[3] Ranking's Half-yearly Abstract, vol. xx. p. 52, and British and Foreign Medico-Chirurgical Review for July, 1855, p. 236.

"The efficiency of the ammonium salt, as a remedy in the cases noted, led me gradually to extend its use, and subsequent trials, frequently repeated, have shown that in cases of chronic rheumatism it often proves of great advantage. It is doubtless true we will be occasionally disappointed. This, however, happens often with our best remedies; but in those forms of rheumatic disease in which there is but little constitutional disturbance—those cases, in short, in which the iodide of potassium is found advantageous—the chloride may be given with every likelihood of benefit. In this affection, I have given the salt a very extended trial; but, in recommending its use, I need scarcely hint that it is not to be depended on to the exclusion of those secondary means—warmth, frictions, &c., that form a part of any treatment we may employ. I have also tried the chloride in periosteal inflammation of a chronic character, and having a syphilitic origin. Here its advantages are not so apparent, yet it seldom fails to give relief, and in cases where the iodide of potassium had ceased to exert any apparent influence on the disease, the substitution of the chloride has been followed by a rapid cure.

"In enlargement of the lymphatic glands, I have not had such an experience of the use of the chloride as enables me to speak with confidence of its action. Yet more or less benefit will follow its prolonged employment. In that variety of bubo aptly designated Indolent, which so often exhausts all ordinary remedies, and frequently our patience, the use of the chloride often speedily effects its removal. I am in the habit here of applying it also externally. A strong solution being employed (ʒij to the ℥j), lint is soaked in this, applied to the swollen surface, and covered with oiled silk. In such cases, the general treatment must not be forgotten. The state of the bowels must be watched, and, if need be, corrected, the diet employed being nutritious. Carefully applied pressure over the swelling is also a valuable auxiliary.

"In another point of view, the chloride of ammonium has an advantage. It is cheap. This precludes the likelihood of intentional adulteration. Sometimes it is impregnated with iron, and, it is said, occasionally with lead. As regards the former, when present, it exists in such small quantity that it can in no way interfere with its action; and as regards the latter, any samples I have tested showed no evidence of its presence.

"By writers on the Materia Medica, the dose of the chloride is stated to be from 5 to 30 grains. The quantity prescribed by me has varied from 5 to 10 grains, three or four times a day. Dr. Ebden, in the paper already noticed, states he employs from 25 to 35 grains in neuralgic affections, repeated at short intervals. I have never given the salt in such doses. His experience, however, accords with my own as to the effect on the system of the quantities I am in the habit of administering. This agreement was to me the more gratifying, as I was not aware of the existence of his paper till these remarks were nearly completed, and it adds to the confidence I have in urging the medicine on professional attention.

"The chloride of ammonium may be administered in simple or medicated waters. Where there is evidence of febrile disturbance, small doses of emetic tartar may be advantageously added. I frequently prescribe it with some bitter infusion, as quassia, cascarilla, gentian, &c. In cases where an anodyne may be necessary, the solution of the muriate of morphia may be conjoined in appropriate doses. It need scarcely be added, that the alkalies with their carbonates, as also the nitric and sulphuric acids, are incompatible.

"The preceding observations have been limited to a mere narrative of observed results. Any endeavour to explain the nature of the influence exercised by the chloride over the organism has been carefully avoided. To judge of the action or effect of a medicine is always sufficiently difficult, without attempting to accomplish more. Even where the mind is least biassed, the accidental is often apt to be confounded with the essential, and antecedents linked with results with which they may be but very remotely related. This is not to be wondered at when we think on the very varied influences that combine to modify disease, and, as a necessary sequence, the actions of those agents we employ for its removal. Of disease we know nothing other than what is made known by symptoms and observed structural change, and of medicines only so much as they alter or modify these. Frequently the mind is not content with this, seeking to penetrate further, leaving the true field of observation, and attempting to grasp at what is placed far beyond mental reach. Thus it is that the science of therapeutics has not advanced with that steady onward step which has marked the progress of other departments of knowledge. The properties of matter are studied, the circumstances that modify these observed, and the information so acquired is applied to the purposes of life. The day is past in which it was sought to elicit its ultimate nature or essence. So ought it to be with medicines. Their actions, and the circumstances that modify these, should alone be investigated. The therapeutic power of the mercurial compounds is acknowledged, and every day applied in the treatment of disease; yet how little, how very little, of useful knowledge is to be gleaned by the study of the various hypotheses that have been offered to explain their action.

"These remarks may be considered by some foreign to the subject of this paper. They will, however, serve to show why I have not thought fit to attempt to explain the *modus operandi* of the chloride. Of this I know nothing. I have seen its beneficial employment, and presume to think that when in more general use, it will be assigned a position amongst our more valuable alterative, resolvant, and liquefacient remedies."

7. *On the Employment of Tannin and Tannic Acid.*—Dr. Berthold draws attention to the great efficacy of a very simple mode of treating chilblains, and preventing their relapse. Twelve drachms of bruised galls are boiled for a quarter of an hour in half a pint of water, and strained. The fluid is applied to the parts two or three times daily for a quarter of an hour. The itching and burning diminish in two or three days, and ulcers heal in about a week. The same effects result from an infusion of oak bark, made with ℔j of water to ℔j of bark, and standing twenty-four hours. The solution of half an ounce of tannic acid in half a pound of water may also be used. For preventing the occurrence or relapse, any of these may be employed once a day, or if the chilblains are not broken, tincture of galls may be used.

Dr. Bühring speaks highly of the power of tannin in arresting hemorrhage, when applied thickly on a piece of soft sponge to the bleeding part. No pain or irritation results, the healing process is expedited, and the firm plug that is formed offers great security against future bleeding. Dr. Mund also states its styptic power is remarkable, especially in epistaxis and hemorrhage after tooth-drawing. A plug of charpie is moistened in water, and dipped in the powder.

Its use, however, is far from being limited by its styptic agency, it being applicable in most disordered secretions dependent upon debility of vessels. Thus, in chronic gonorrhœa, ℈j of tannin dissolved in four ounces of water, with the addition of ℥j of gum Arabic, forms a good mixture for internal use, as well as an injection, and the affection soon yields. The same mixture is an excellent one in chronic diarrhœa, and the third stage of dysentery, although it is taken unwillingly by the patients. It is also useful in the third stage of pertussis, given in the following form: ℞.—Tannin gr. vj; ext. bellad. gr. j; ext. cicutæ gr. iv; infus. sennæ c. ℥ij; aq. fœnic., syr. altheæ, āā ℥j. A spoonful every two hours. Dr. Kipp testifies to the great utility of tannin in menorrhagia, and excessive fluor albus; a continued use of it for two or three months, in increasing doses, has in many cases completely succeeded, when organic mischief has not been present. Sometimes oppression of the stomach results from its use, which is usually relieved by temporary suspension, diminution of the dose, or the addition of aromatics. The dyspeptic condition, which results from the loss of blood, is relieved by its use, the loaded tongue cleaning, and the appetite and stools returning. He generally gives it in the form of pills, of one to five grains, three or four times a day, adding rhubarb or aloes, in the event of constipation occurring, a due regulation of the bowels being essential during its employment. He also uses it with advantage externally in various forms of ophthalmia, as that of infants, catarrhal ophthalmia, etc., increasing the dose from three to ten grains per drachm.—*Med. Times and Gaz.*, Sept. 15, 1855, from *Buchner's Repert.*, 1855, No. 4.

8. *On the Diet of Weaned Children.*—Dr. Gumprecht some time since published a paper upon the usefulness of expressed carrot-juice combined with farinaceous substances, in the feeding of children about to be, or already weaned. Further experience has confirmed the value of this mild and easily digested nutriment; but, although suited for the great majority of these cases, it may seem to be contraindicated in those of children who, whether from naturally weak digestive powers, improper diet, or neglected tooth-diarrhœa, have acquired a disposition to purging. Such cases, the digestive powers being prostrated, require food that, by reason of its analogy with the formative elements of the infantile organism, allows of a rapid intimate assimilation, without prolonged previous metamorphosis of the original nutriment, and without leaving undigested residue. It has been attempted to nourish these children with diluted milk and farinaceous substances, such as salap, arrowroot, etc.; but it has been overlooked that starch-flour cannot be completely dissolved even in much water at a boiling heat, and the thick covering of the granules remaining undissolved, may give rise to indigestion. To obviate this, roasted and not raw starch should be employed. But the weaned child requires also albumen, and a proper proportion of organic salts and fat. Salts, fat, and albumen, or salts, sugar, and albumen, are the three constituents that are indispensable for the proper nutriment of the body.

The author regards it as an error to refuse meat to such children in favour of less digestible vegetable substances. This meat is best supplied in the form of raw, prime rump-steak, devoid of fat, rubbed into a paste, of which about two spoonfuls, divided into four repasts, are given daily, with or without sugar. Either this, or Liebig's flesh broth, should be given with some roasted farinaceous substance. This nourishment is especially indicated when any inclination to diarrhœa exists, and forms one of the best remedies in obstinate diarrhœa lactantium, as also in conjunction with other measures in atrophia infantum.

From its great utility in the above cases, the natural conclusion is, that it may be the proper nourishment for children already weaned, especially in weak, scrofulous, and lymphatic subjects. By the process of roasting, the outer covering of the starch granules become destroyed, and the flour is converted into gum and dextrine, which are easy of digestion. It should then be prepared by first mixing the starch with cold water, pouring on the hot water, and boiling, stirring the while. Liebig's broth, either with or without the farinaceous addition, is an excellent diet in such children, when inclined to diarrhœa. It is made by chopping up small pieces of beef, quite free from fat, as if for sausages. A pound is mixed with equal parts of water, and, adding a little salt, this is boiled for half an hour. It is then strained, separating the fat, coagulated albumen, and fibrin, and leaving all the nutritious and sapid portions. For the poor, an excellent broth may thus be prepared from horse-flesh, and, when mixed with the roasted meal, forms an excellent diet for scrofulous and rickety children.—*Med. Times and Gaz.*, Sept. 15, 1855, from *Journal für Kinderk*, Bd. xxiv.

9. *Syrup of Hydriodic Acid.* By James Murdoch, of Glasgow.—Hydriodic acid, in a liquid form, has been introduced into medicine by Dr. Andrew Buchanan, as having the therapeutical properties of iodine, without its irritant action. It has also been employed by him in the treatment of choleraic disease, and accordingly becomes a preparation of considerable interest.

The following speedy formula he has given for preparing it: Take of tartaric acid, 264 grains; iodide of potassium, 330 grains. Dissolve each separately in f℥iss of distilled water; mix the solutions, agitate, and strain to separate the bitartrate of potash, adding water to make up the measure to f℥vi¼. Each fluidrachm of this solution should contain 5.072 grains of hydriodic acid, equal to about 5 grains of iodine. When the solutions are mixed, the liquid assumes a slight yellow colour, and in ten minutes after gives a slight tinge of violet with a cold solution of starch, which gradually changes to a deep blue.

This rapid decomposition appears to arise in some measure from the agitation necessary to effect the separation of the bitartrate, and consequently greater contact with the air. When hydriodic acid is prepared by the sulphuretted hydrogen process, it does not show decomposition for an hour or two after it is prepared; but if moderately agitated, it shows the presence of free iodine much more speedily. It is, therefore, essential, in dispensing this acid, to prepare it extemporaneously, and supply it frequently, to obtain its medicinal action. It may very speedily be prepared by the above process, and, for convenience, the solutions may be kept ready made and mixed when required; but as 264 grains of tartaric acid in f℥iss of distilled water measures fʒxv, and 330 grains of iodide of potassium, in the same quantity of water, measures fʒxiv, it will be necessary to employ them in these relative proportions. Dr. Buchanan also directs it to be taken in starch gruel, which has the chemical effect of combining with the iodine that is liberated during the time of its administration.

I find that hydriodic acid may be prevented from undergoing this decomposition when in the form of a syrup. The antiseptic properties of sugar are well known to the pharmaceutist, in the vegetable kingdom in the case of vegetable syrups, and in the mineral kingdom in the case of certain protosalts of iron, where the presence of sugar prevents the latter from becoming peroxidized by the absorption of oxygen, as in the cases of the carbonate, iodide, and protonitrate of iron.

What method, therefore, will be best adapted for the preparation of this syrup? In the usual way of preparing hydriodic acid, by passing sulphuretted hydrogen through iodine suspended in water, the iodine is very apt to be enveloped in portions of the sulphur that is set free, and escape the action of the HS. This being guarded against, a solution of hydriodic acid could be obtained, from which a syrup might be prepared, if cautiously operated upon, that would contain no free iodine. The repugnance, however, that is usually felt by the pharmaceutist to the employment of HS, as the means of preparing pharmaceutical products, would render this process objectionable, although it should be found to be in other respects available. With another means of preparing this acid, by decomposing a solution of iodide of barium by the equivalent of sulphuric acid, and filtering to separate the insoluble sulphate of barytes, as the iodide of barium itself is an unstable compound, it would be necessary to prepare this salt at each manipulation.

Assuming, therefore, that if a syrup can be prepared by Dr. Buchanan's solution that shall contain no free iodine, it will furnish the most suitable manner of obtaining this acid for medicinal purposes, I have to propose the following proportions for a syrup. It is necessary, however, to observe, as one of the conditions of success, that the iodide must be free from any trace of iodate of potash.

Of four different samples of iodide that came under my notice, all gave a slight iodine reaction with solution of tartaric acid and starch. These, although containing extremely little of the other impurities usually found in iodide of potassium, were contaminated with a minute portion of iodate of potash. They had been prepared by what is known as the caustic potash process, and accordingly extremely liable to contain some undecomposed iodate. But as it is quite possible to produce a salt by this process that shall be entirely free from even a trace of iodate, I think it is only necessary to guard manufacturers against this salt occurring in their product, to make it suitable for preparing hydriodic acid. I have accordingly used an iodide prepared by the *Pharmacopœia* method of decomposing the solution of iodide of iron by carbonate of potash:—

The Syrup.—Take of sugar ℥ij, ʒss; water ʒv. Dissolve in a flask with the aid of heat, and allow it to cool. Prepare solution of hydriodic acid as before mentioned, without adding any of the additional water. This operation should be done speedily, and it may answer for that end to strain it through calico. If paper were used, decomposition would show itself before filtration could be completed, unless the quantity was small. Of this strong solution take f℥ss and ℈j, and mix with the syrup. The whole should measure f℥ijss, and each fʒj contain the equivalent of grs. ij of iodine.

Or it may be prepared by dissolving the hydriodate and tartaric acid, each, in syrup instead of water, mixing them together, and letting it stand for a few hours to allow the bitartrate to settle, and pouring off sufficient for the required quantity of syrup. With this latter mode, which appears the more feasible of the two, a slight decomposition takes place with the syrup in the first instance, probably owing to the quantity of sugar being insufficient to preserve it; but, after being mixed with the larger portion of syrup, it remains unchanged.

Syrup of hydriodic acid, by the first method, I have had prepared since the 3d of June, and it remains nearly colourless. I have also syrups having some colour, which have been made for several months, that have the same appearance as when first prepared. In a syrup prepared early in the winter, the sugar has crystallized out of the solution, and the liquor on the surface, now weak of sugar, has a bright-yellow colour, and gives a strong reaction with starch; but the crystallized portion is not affected by it unless a little nitric acid is also added, when it reacts strongly. Hydriodic acid being gaseous, it will not be possible to procure it in a solid form, combined with sugar. When a strong solution is mixed with powdered sugar and moderately heated, it gives off bubbles of hydriodic acid, becoming darker in colour, reacting strongly with starch, and ultimately becoming completely black, with abundance of free iodine.

The precise action of sugar, with reference to those compounds that have been named, is still obscure. Klauer considers that a regular compound is formed in the case of carbonate of iron, but the subject of this notice is an instance where the action of sugar is not confined to salts of iron. In conclusion, it is very probable that the protective agency of sugar is exercised over many other decomposable substances that have not been examined as to this property; and, if it be so, it must become of corresponding importance as a chemical agent in pharmacy.—*Pharmaceutical Journal.*

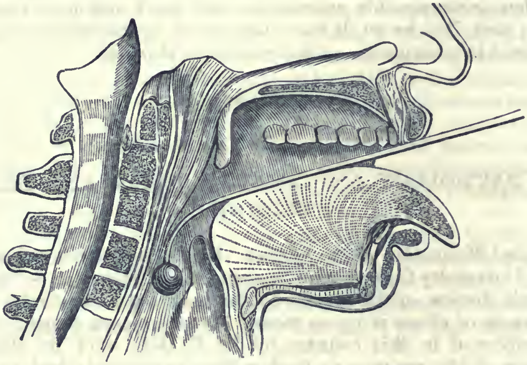
MEDICAL PATHOLOGY AND THERAPEUTICS, AND PRACTICAL MEDICINE.

10. *On Topical Medication of the Larynx.* By John Erichsen, Esq., Professor of Surgery at University College, and Surgeon to the Hospital.—The practice of treating chronic disease of the larynx by the local application of a strong solution of the nitrate of silver is by no means of very recent origin. Many years ago it was employed in this country by Sir C. Bell; and Dr. Watson, in his *Lectures*, speaks of the practice as having been extensively had recourse to by Mr. Vance, who, being a naval surgeon, applied to it the very expressive term of "swabbing." So far back as 1818, M. Trousseau states that "his preceptor," M. Bretonneau, used the saturated solution of the nitrate of silver as a local application in diseases of the larynx, applying it by means of a sponge attached to a piece of whalebone. Of late years this practice has become a very favourite mode of treatment in many diseases of the throat, and in not a few of the lungs, and has been brought very prominently before the profession, chiefly through the writings of Trousseau, in Paris, and of Dr. Horace Green, in New York.

Of the great value of the local application of a strong solution of the nitrate of silver to the throat, in many affections of the larynx, there can be no doubt. Indeed, I believe it to be impossible to bring deeply seated and very chronic inflammatory or ulcerative affections of this part of the air-passages to an equally satisfactory termination by any other means, or, indeed, to cure the majority of them without this "topical medication;" and the profession is undoubtedly under a debt of gratitude to those practitioners whose names I have mentioned, through whose example and writings the utility of this method of treatment has been demonstrated.

During the last few years, an attempt has been made to treat diseases of the respiratory organs seated *below the larynx* by this method; and, by passing a sponge-tipped probang *between and beyond the vocal cords*, to apply a solution of the nitrate of silver, and various other medicaments, to the interior of the trachea, the bronchi, and even into tuberculous cavities of the lungs. In my recent work, *The Science and Art of Surgery*, whilst discussing this subject, I ventured to express my doubts whether this practice, though commonly spoken of and professedly employed, had ever in reality been carried out; and I proceeded to state that I had no hesitation in expressing my conviction that the sponge probang had never in the living subject been passed *beyond the true vocal cords*, though I believed that with the requisite dexterity it might be got between the lips of the glottis, and the solution freely applied to those parts; and I proceeded to say that, in my opinion, in those cases in which the sponge has been supposed to have been passed beyond and between the true vocal cords, and in which the operator speaks of having felt the constriction exercised by them in its entry and exit, it had not entered the larynx at all, but had passed behind this tube into the œsophagus, the feeling of constriction being produced by its passage beyond the thyroid and cricoid cartilages where they project backwards, and that the caustic solution had been applied, not to the interior of the larynx, except when a few drops accidentally squeezed out by the pressure of the sponge against the lips of the glottis have been inhaled, but to those extensive folds and planes of mucous membrane which invest the base of the epiglottis and the back of the thyroid cartilage, and which, with their subjacent cellular tissue, are usually greatly congested and infiltrated in chronic throat diseases; in fact, that the sponge probang is passed in the way represented in the annexed wood-cut.

Fig. 1.



Indeed, were it otherwise, and did the sponge really penetrate between and beyond the true vocal cords into the trachea, hitching against these, as it was withdrawn, with a jerk, or a distinct feeling of constriction, this operation would be one of the most dangerous in surgery, the whole safety of the patient depending, not on the dexterity of the surgeon, but upon the integrity of the thread, corroded by nitrate of silver, with which the sponge is attached to the whalebone: did that give way, the sponge, hitching against the vocal cords, must necessarily be detached; and what would the condition of that patient be into the chink of whose larynx half a cubic inch of sponge was impacted, or in whose trachea such a mass, saturated with nitrate of silver, lay loose?

This opinion, to which I still adhere, was deliberately formed and based on experiments on living animals, and on the dead subject, on observations made in cases of cut throat, and on a fair share of practical experience in the treatment of the diseases of the air-passages, not only in ordinary hospital and private practice, but when acting as surgeon to the City of London Hospital for Diseases of the Chest. It has, however, met with much opposition and angry denial; and, for venturing it, I have been assailed in terms which a recent reviewer somewhat blandly designates as "barely civil." This, however, matters little; truth is but poorly advocated by personal attacks, and medical science has never yet been promoted by sneers. My object in this inquiry (which was commenced twelve years ago, and has been continued at intervals since) has not been to contest the opinions of individual practitioners, but to investigate the broad question as to the possibility of passing the *sponge probang*, in the living subject, through and below the true vocal cords into the trachea and bronchi. To this point I alone refer, and, in doing so, I wish it to be distinctly understood that I do not in any way impugn the great value of the topical application of a solution of the nitrate of silver to the throat in laryngeal diseases, to which I have already borne ample testimony, and of which I have had abundance of experience. The only question at issue is as to the depth to which the *sponge probang* has been passed, and not as to the advantage attending the application of nitrate of silver in throat diseases.

This question has during the past year attracted much attention in America, more particularly in connection with a suggestion made by Dr. H. Green, of treating phthisis by injecting a strong solution of nitrate of silver into the tuberculous cavities, through a tube passed into the lungs through the larynx, trachea, and bronchi. In a paper presented to the New York Academy of Medicine, on this subject, and of which Dr. Green has had the kindness to send me a copy, that gentleman, after alluding in very flattering terms to my published opinions on this subject, proceeds at some length to combat them. The New York Academy of Medicine appointed a committee to gather evidence on this point, and to report thereon; and, through the kindness of Dr. Stone, of New York, a copy of that report, which is of an extremely valuable and interesting character, and to which I shall have occasion presently to refer, has been presented to me. This report confirms the opinion that I had previously expressed, that there was no evidence of the sponge probang ever having been passed through or below the vocal cords; Dr. Green, notwithstanding the special dexterity which he had acquired in the management of this instrument, having in every instance failed to do so.

On inquiring into the evidence on which it is founded, the doctrine of the passage of the sponge probang through and beyond the vocal cords, I have failed to discover that any of a positive character exists, and, so far as I can gather from the writings of its supporters, it would appear that the reasons from which it is inferred to do so may be arranged under the following heads:—

1. The sensations of the patient.
2. The sensations of the surgeon.
3. The analogy offered by the introduction of tubes for the purposes of artificial respiration, and by the inhalation of foreign bodies.

These different conditions we must examine somewhat in detail.

1. *The Sensations of the Patient.*—The exquisite degree of sensibility possessed by the larynx need not be dwelt upon here. Mr. Porter, in his admirable work *On the Surgical Pathology of the Larynx and Trachea*, very justly says: "It (the larynx) is placed as an outwork to protect the important organ of respiration, and rejects vehemently and with spasmodic violence every substance that can by possibility prove offensive or injurious." Many years ago, Magendie showed that this was the most sensitive part of the respiratory tube; and in the year 1843 I published in the *Medical Gazette* a series of experiments which demonstrated the same fact. Since then I have had repeated opportunities of verifying the correctness of these observations in the human subject, in cases of cut throat and aerial fistula, in which, by means of probes introduced through the artificial opening, I have tested the extreme sensibility of the larynx as compared with other parts of the air-passages, and have often observed the spasmodic irritation and great distress suffered by the patient when its mucous membrane is touched from within, and this even though the part is no longer subservient to the purposes of respiration, and the sensation of asphyxia not experienced, which would otherwise be induced, and which would greatly aggravate the distress.

If a long, bent probe, or a gum-elastic catheter, be passed over the back of the tongue, two classes of sensations will be elicited, according to the part that is touched. If the instrument be directed down the pharynx, and altogether behind the larynx, into the œsophagus, as in the introduction of the stomach-pump tube, the patient will experience some little distress, which is easily quieted. The face will become slightly congested, and the eyes perhaps somewhat suffused, with a disposition to cough, a slight feeling of choking, and some constriction about the chest. All these sensations, however, are transitory. These symptoms may be termed *pharyngeal.*

If, on the other hand, the probe or tube be bent *forwards,* so as to touch the lips of the glottis, and more particularly if an attempt be made to push it on into the larynx, then a widely different train of symptoms will be induced. The patient suffers extreme distress and anxiety; there is great sensation of constriction about the chest and throat, spasmodic difficulty in breathing, and an inability to speak; the countenance becomes much congested and livid; the eyes protrude and stream with tears; he stands up, gropes wildly with his hands, and is pacified with great difficulty. As the attack goes off, there are deep, sobbing inspirations, and catches in the breathing. These symptoms, which are analogous to those induced by the irritation of the inside of the larynx through an aerial fistula, may be termed *laryngeal.*

The first class of symptoms is produced by the application of an irritant to the mucous membrane of the pharynx; the second, to irritation of the larynx. Their severity will, in a great measure, depend upon the nature of the irritant applied. They will necessarily be far more severe when a sponge soaked in a caustic solution is thrust down the throat, than when a smooth and unirritating gum-elastic tube is passed.

Both these classes of symptoms are commonly met with after the application of the throat probang. When the *pharyngeal* symptoms occur, there can be little doubt that no sponge saturated with a strong solution of nitrate of silver has penetrated into the glottis. But is not the case different when the *laryngeal* symptoms are fully developed? Must these not, when existing in their full intensity, be taken as evidence of the introduction of the sponge probang through the glottis? To this I have no hesitation in answering in the negative. I have repeatedly brought on these symptoms, in the most morbid degree, without the use of a sponge at all, or the introduction of any solid body into the larynx. In fact, if a drop of a strong solution of the nitrate of silver is fairly *inspired* into the larynx, the most intense distress and appearance of impending asphyxia will be induced. I saw this well exemplified, some time since, at the hospital, whilst applying a strong solution of nitrate of silver, by means of lint wrapped round a probe, to a syphilitic ulcer on the soft palate, altogether away from the larynx; a drop was accidentally inhaled, when the patient was suddenly seized with one of the most intense attacks of laryngeal spasm that I have ever seen; for a few moments she appeared to be about to die, asphyxiated, and had all the laryngeal symptoms above described fully marked.

In many cases I am in the habit of applying the solution of the nitrate of silver by means of a strong glass tube, bent nearly at right angles about an inch from one extremity. A few drops of the solution are introduced into the bent end of the tube, and this being passed over the back of the patient's tongue, so as to overhang the glottis, the other end is closed by the pressure of the finger. The patient having previously emptied his chest, is then told to take a deep breath, and, at the moment of doing this, the finger being removed from the tube, the solution contained at its bent end is inhaled fairly into the larynx; and, when so applied, will produce the symptoms already described.

Thus, then, we may conclude that when the *pharyngeal* symptoms exist alone, the sponge cannot have passed into the true air-passages; and that the *laryngeal* symptoms, however intense they may be, afford no evidence of more than the inhalation of a drop or two of the caustic solution into the glottis.

2. *Sensations of the Surgeon.*—The little reliance that can be placed on the mere sense of touch in many explorations of the mucous canal is well known to surgeons. It often happens, for instance, that, in the attempt to relieve retention of urine from enlarged prostate, the catheter is supposed to be lodged in the bladder, when it has only reached the dilated sinus of the urethra: so also, in passing bougies up the rectum, that the instrument has entered the

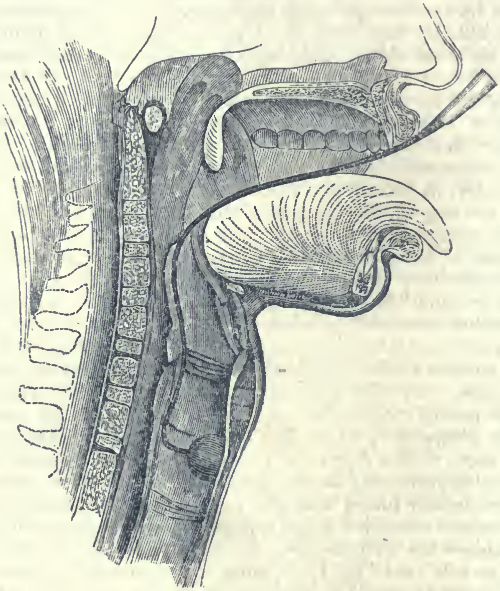
sigmoid flexure, when, in reality, it has curled back upon itself. Those practitioners, however, who believe in the possibility of passing the sponge probang beyond the vocal cords, rely much on the sensations communicated by its passage through this narrowed portion of the larynx. They say that in passing the instrument to the proper depth, a certain sense of obstruction is felt; against this, which is believed to be the vocal cords, the sponge is firmly pressed for a moment, when the obstacle yields, and the instrument passes onwards into the air-tubes. On the withdrawal of the probang, the same feeling of constriction is experienced by the sponge being drawn up against the cords. These sensations are undoubtedly experienced. I have many times felt them myself, and, had I judged by them alone, could have been almost certain that I had passed the instrument between and below the vocal cords, and this belief would have been strengthened by the circumstance that in many of the instances in which this constriction was felt the *laryngeal* symptoms were manifested. I soon found, however, that this was by no means uniformly the case, but that it not unfrequently happened that the *pharyngeal* symptoms only were induced, and that consequently, in accordance with what I believed to be the proper state of sensibility of the larynx, the interior of that tube could not have been traversed by the caustic sponge. Finding, also, the same sensation often experienced in the introduction of bougies and tubes into the œsophagus and stomach, it was clear that it could have nothing to do with their progress through the larynx, and I was led to conclude that it was occasioned by the passage of the instrument through that narrowed portion of the end of the pharynx, or the beginning of the œsophagus, where the cartilages of the larynx, projecting backwards, give rise to a certain amount of constriction, compressing the gullet, as it were, against the spine. Here the instrument meets with a certain degree of obstruction, which is partly mechanical and partly occasioned by spasm of the constrictors of the pharynx; and, on this being overcome, passes on with a sudden slip, again to meet with a degree of constriction on being withdrawn.

In numerous experiments on the dead body that I have made on this point, I have very frequently found that the instrument had passed into the œsophagus, when, from the sensation it gave, those who had introduced it felt confident that it had entered the air-passages. In fact, the shape of the sponge probang, as it is always sold (see Fig. 1), is such that it cannot be made to enter the larynx and to pass beyond the vocal cords in the dead body, without the employment of a considerable degree of force, and by means of those manipulations which are alone admissible in the living patient. A probang, with a short curve, such as those that are uniformly employed, has a natural tendency to take the direct passage, as it were, down the œsophagus, instead of turning forwards to enter the larynx. When the curve is much increased, as in an ordinary catheter, the sponge may during life be passed between the lips of the glottis, but it cannot even then be made to pass between and below the vocal cords, in consequence of the curve being too large to be admitted into the diameter of the trachea. The evidence of the New York Academy commission fully warrants this statement, for the reporters remark that, notwithstanding the most persevering efforts with the whalebone slightly bent, as used by Dr. Green, and with patients who quietly submitted to the test of experiment, the results were entirely negative. In no instance did it enter the trachea. In two instances, with the whalebone *curved like a common catheter*, the sponge was thought to have entered the larynx, but, with repeated attempts, it could not be forced between the vocal cords, and the suffocation was so great that it was necessary to withdraw the instrument.

If a small curved probang, of the ordinary shape, be made to enter the larynx of a dead subject, by raising the handle well against the upper teeth, and pressing the sponge forcibly forwards between and under the tongue, and then be pushed down between and beyond the vocal cords, it will be found that the sponge scrapes along the anterior wall of the trachea, and that the handle of the instrument is thrown into the extraordinary curves represented in Fig. 2. That inflamed and irritable air-passages would benefit under treatment such as this, seems scarcely probable.

The fallacy of the sensations of the surgeon is well illustrated in the following extract from the report of the commission of the New York Academy: "We witnessed in cases 11 and 21 the fallacy of Dr. Green's opinion as to the success of his experiment, though based on so large an experience. In both instances, whilst positive that he had successfully passed the instrument (an elastic tube) into the trachea, *the patient vomited through the tube,* and thus demonstrated his error."

Fig. 2.



From these observations, then, I would conclude that the sensations of the surgeon afford no reliable evidence as to the course taken by the instrument.

3. In asserting that the sponge probang can be passed into the air-passages, much reliance has been placed on the analogy afforded by the introduction of tubes for the purpose of artificial respiration, and in the occasional inhalation of foreign bodies. Does any such analogy really exist? I think not. It seems to me that so very different a degree of irritation would be set up by the introduction of a smooth, well-oiled tube, of small calibre, through which the patient can breathe, and from which consequently there is no risk of suffocation, and the passage of a caustic sponge, which not only would stimulate the part violently, but would necessarily induce temporary asphyxia by blocking up mechanically the air-passage, that no analogy can be drawn from the one case to the other. To do so seems about as reasonable as to infer that because a gum-elastic or silver catheter may be passed along the urethra, therefore a whalebone rod, tipped with a sponge soaked in a caustic liquid, might also be introduced into the bladder.

With regard to the introduction of foreign bodies into the larynx, it appears to me that there is no analogy whatever between this accident and the passage of the caustic sponge. In the one case the parts are taken by surprise, the foreign body being accidentally sucked into the chest by a rush of air, during inspiration, through an open glottis; in the other case the patient is prepared for what is about to take place, involuntarily and instinctively resists, and, holding his breath, keeps the glottis closed.

But, setting aside this question of analogy, which is of little moment, is the introduction of tubes, even into the larynx, so very easy and simple and certain a procedure as some writers seem to suppose it to be? On the dead body, undoubtedly, nothing is easier than to pass a catheter into the larynx, and down into either bronchus; but is it so in the living? That excellent surgeon, Mr. Porter, of Dublin, when speaking of the introduction of Desault's tubes through the rima glottidis, in cases of cut throat, says: "Awkward and reiterated attempts produce inconceivable distress, and, even when performed with the utmost dexterity, it must unavoidably excite cough and restlessness" (p. 225). And again: "Every time the instrument touches the larynx the patient becomes anxious and restless; he tosses himself about, and coughs convulsively; and each motion, whilst it increases his own distress, renders the performance of the operation more difficult. . . . Can such a patient endure the irritation that a few moments' unsuccessful poking at the rima glottidis will inevitably occasion?" (pp. 256–7.) The truth of these remarks must be acquiesced in by every surgeon who has ever attempted the operation there described.

On this point the evidence of the New York Academy commission is peculiarly valuable. That commission, in its inquiry, employed two tubes, the size of a No. 10 catheter; one, selected by Dr. Green, was slightly bent at its extremity, and was one of the kind employed by him in his practice. The other consisted of a catheter with a wire stilette, bent with a curve, the segment of a circle six inches in diameter. This tube does not appear to be used in practice, but was employed for the purpose of comparison. The result of the experiments with these tubes was, that Dr. Green (who was the only one that employed it) failed in passing the tube with the *small* curve in thirty-five out of thirty-eight trials, or in about ninety-two per cent. of the cases; and that the tube with the *large* curve was passed in eight cases out of thirteen; whilst the sponge probang failed in every case (eighteen) in which it was tried.

"From these experiments it would appear that the instrument best adapted to succeed in catheterism of the air-passages is the tube having a large curve; whilst that least adapted to enter the trachea is the sponge probang."

In the course of these experiments, a point of much interest was elicited by the commission, viz: that a patient might blow out a lighted candle, or collapse and inflate a bladder attached to its free extremity, through the tube, even though it had never entered the trachea, but had been purposely passed into the œsophagus.

On this third point, then, I think we are warranted in the conclusion that there is not sufficient analogy between the introduction of the sponge probang and that of a catheter tube into the larynx, to lead us to suppose the passage of the former instrument possible because that of the latter is occasionally practicable; and that the introduction even of a tube of the same shape as the sponge probang is an operation of extreme difficulty, failing in far the greater proportion of cases in which it has been attempted; and that the introduction of foreign bodies into the larynx is effected under totally different conditions to that in which the sponge is attempted to be passed.

Finally, I think that we are fully justified in adopting the conclusion of the commission of the New York Academy, that there is no reliable evidence that the sponge probang has ever been passed through and beyond the vocal cords. —*Lancet*, Nov. 24 and Dec. 1, 1855.

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11. *The Nature and Treatment of Encephalo-Meningitis.*—Dr. Leon Liegard, whose special attention has been drawn to this disease by the excessive fatality of meningitis of children in the Hôpital de l'Enfant Jésus, and by the apparent inefficacy of the various remedies of an opposite character administered, supports M. Robin's opinion, that the granulations met with in these cases are not of a tuberculous character, and that we must therefore materially modify our views with regard to the nature and treatment of the disease. It appears that the medical officers of the hospital had been so discouraged by the inutility of applying either the antiphlogistic, the alterative, or the tonic mode of treatment, that they abandoned therapeutic attempts altogether; and, a diagnosis of meningitis having been established, resigned their patients to their fate. The views advocated by the author are mainly based upon Robin's micrographic account of the granulations, so that it is necessary to give a summary of his description.

Robin assumes two varieties. The first is of a yellowish tint, softish to the touch, and friable. Nine-tenths of these granulations consist of a finely granular amorphous matter; they contain a small quantity of cytoblasts, a few capillaries, and occasionally fibro-plastic formations. The second may, and most frequently does, co-exist with the former in the meninges, and is also found coincidently in other serous membranes. It is the form specially known under the term *gray* or *semi-transparent granulation.* Robin finds that the bulk of the product is composed of the same amorphous granular matter as that above described, but that it is firmer; the cytoblasts are in large numbers, as is particularly manifest on the addition of acetic acid. Fibro-plastic elements, and a network of fine areolar tissue, accompanied by scanty vessels, also present. These cystoblasts are described as differing from the tubercle corpuscles (1) in being polyhedric, with irregular and slightly-toothed margins, instead of oval or round; (2) their diameter averages half the size of the latter; (3) the tubercle corpuscle is rendered pale by acetic acid, but is not dissolved; the contour of the cytoblasts is rendered more defined; (4) the granulations contained in the tubercle corpuscle are scattered uniformly through the corpuscle, while in the cytoblasts they are congregated in the middle; (5) although the cytoblasts contain no nucleolus, they belong to the cellular element which commonly exhibits the presence of free nuclei. We scarcely ever find the variety of free nuclei without meeting with some cells containing a nucleus resembling the free nuclei.

Assuming this definition of M. Robin's to be correct, the author regards the inflammation which determines the formation of the granulations to be of a specific character, analogous to that of croup, and attributes the fatality of the disease in the children's hospital to the erroneous assumption that it was of a tuberculous character. M. Liégard then quotes several cases diagnosed as tubercular or granular meningitis, in which cures were obtained by powerful antiphlogistic remedies, especially by vensection or leeches to the mastoid processes, and mercurial inunctions over the abdomen, repeated every three hours, with calomel administered internally. The author admits the impossibility of diagnosing the granular from the simple form of meningitis, and proposes the classification of the disease, according to the violence of the symptoms, and the rapidity of its course, into the inflammatory and sub-inflammatory forms. According to the intensity of symptoms, he recommends a variation of the treatment, not in kind, but in degree; and he concludes, both from the character of the morbid changes and the results obtained on the basis of the views advocated, that this fearful malady may be successfully combated by the means proposed, and ought not to be regarded as necessarily fatal.—*B. & F. Med. Chirurg. Rev.*, Oct. 1855, from *Rev. Medico-Chirurg. de Paris,* Jan. and Feb. 1855.

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12. *Cataleptic Hysteria.*—Dr. Ringland communicated to the College of Physicians, in Ireland, April 4th, 1855, the following very curious case of cataleptic hysteria:—

Mrs. ——, an English lady, of literary tastes and sedentary habits, about thirty years of age, and married eight years, had been very delicate from her earliest infancy. During the six years antecedent, and the year immediately subsequent to her marriage, she suffered from most intense headache. Two years prior to her marriage she was under treatment for spinal irritation, as she was informed by her then medical attendant. About this period, too, she voided several portions of tapeworm, and had frequently, both before and after her marriage, passed large quantities of ascarides. She was at all times subject to palpitation of the heart, and had on one or two occasions a slight hysterical fit. She suffers intense pain on touching the last dorsal vertebra, which for some years has projected to about the size of a nut. A sound as loud as the snapping of the fingers is frequently heard proceeding from this locality whenever she is much fatigued, or has been standing for a considerable time; and this sound Dr. Ringland has more than once heard. She also experiences, since her first confinement, great pain on the least pressure being made against the coccyx, which has been slightly dislocated downwards and backwards, and has become anchylosed in that direction.

On the second night after she was married, whilst engaged at prayers, she was suddenly, and without the least premonitory indication, seized with the first of the series of fits about to be described; and this was shortly followed by a second, of a like character. An interval of six months then elapsed without their recurrence; when, however, being much about that length of time pregnant, she was again attacked, and, as on the former occasion, without any premonitory symptom, and whilst in a state of complete mental quiescence, having been previously engaged in calm, unexciting conversation with her husband. The headache from which she had previously suffered was greatly aggravated from this period until after her confinement, and she has described it as though a tight iron cap was violently pressed on the upper half of her head, to which the headache was strictly limited. The fits now returned with but very short intervals, and it was with considerable difficulty her medical attendant prevented a premature confinement.

Some little time after the fits became completely established, she observed that, if she was engaged in conversation immediately antecedent to the access of one, she could not command the words she uttered, although fully aware of what she ought to say, and thus she frequently appeared to give expression to the most absurd ideas, and to opinions which were quite opposed to what she had intended to convey. Often, too, having spoken a portion of a sentence, she terminated it on a subject quite different from that upon which she had commenced her observations, or came to an abrupt close, finding herself totally deprived of further utterance.

Up to, and during her confinement, she had frequent attacks, sometimes so many as thirty in the twenty-four hours, and seldom less than fifteen or twenty. After her confinement, which was easy and natural, they were reduced to two or three in the day, and on very rare occasions one whole day has elapsed without their recurrence. Within the last eighteen months her health in this respect has considerably improved, as, repeatedly, days, frequently weeks, and sometimes even a month, has elapsed without a fit.

The origin of this affection she attributes to excessive fright, produced by witnessing very violent paroxysms of hysteria, almost amounting to insanity, in a female relative, with whom she was on a visit shortly before her marriage.

Fatigue, excitement—whether pleasurable or the reverse—or even music—if loud or prolonged—noise—the slightest start—the least pressure against the painful part of the spine, or against the coccyx, instantly induces a fit; they frequently, however, come on without any apparent exciting cause.

The duration of each fit is very variable; sometimes it lasts only three or four minutes, and sometimes it is prolonged to an hour and a half. Dr. Ringland has witnessed several which lasted from twenty minutes to half an hour each.

She has never had less than two fits when attacked, the second being of much shorter duration than the first, and invariably succeeding it after but a short interval.

She appears to have been obnoxious to the attacks at all times and seasons, in all postures, and under every circumstance. She has been liable to them in summer as well as in winter; has been attacked whilst in bed or at her meals; whilst engaged in reading, writing, or in conversation; whilst standing, walking, or sitting; whilst alone or in the midst of strangers;—frequently with a word half uttered, or a piece of food partially masticated; and more than once has her life been placed in jeopardy by the fit occurring when she was near a fire, or whilst she was engaged in the act of deglutition. The presence or absence of menstruation has no apparent connection with the attacks, nor has that secretion ever been in the least affected by them; neither does the existence of pregnancy or lactation seem in any respect to influence this strange affection, excepting that the fits have been much more frequent from the moment of impregnation up to the period of quickening, than at any other time.

Instantly, on the access of a fit, she falls backwards or forwards, according to the direction in which her head has been at the moment. Should she, however, have her baby in her arms at the time, she holds it firmly clutched in her hands, which cannot, without considerable violence, be opened; although, when the fit ensues at any other time, her hands, though closed, can be easily opened.

The particulars of this lady's case Dr. Ringland learned from herself some months prior to her then approaching confinement—her fourth—and which took place early in December, 1854. Immediately after the birth of the child, which was mature and healthy, she had one of her customary fits, which was followed by a second, immediately after the expulsion of the placenta. The following is a brief description of the first fit witnessed by Dr. Ringland.

Without any previous indication whatever, she suddenly seemed to faint, and lay in a state of *apparently* total unconsciousness. She, however, was quite aware of every circumstance that occurred around her, and could afterwards detail the conversation which had taken place in the room. Her limbs remained in whatever position they were in at the time of the attack, or in any other to which they were subsequently changed. There was no alteration in the colour of her lips, in her complexion, or in the appearance of her skin, which remained of the natural temperature. Her eyelids were closed, but when raised, continued open until closed again. The pupils contracted well on exposure to light. Her pulse was about 100, but very feeble. There were no apparent heavings of the chest nor movements of the nostrils. Repeatedly during the existence of the fit, but more violently towards its close, there were convulsive twitchings of the muscles of the face, spasmodic clenching of the fingers, and forcible supination of the hands on the forearm. There were no convulsive movements of the lower extremities, although such occasionally occurred, as she informed Dr. Ringland, and were always present during the first few months of the existence of the fits.

No restoratives were applied during the fit, as she had previously intimated to Dr. Ringland that the employment of the most simple of these had always produced violent and prolonged hysteric paroxysms, which never presented themselves when interference was not had recourse to.

After the lapse of about five minutes she gave a deep sigh, then opened her eyes, looked about her, and feebly held out her hands. On this signal, which is well understood by her attendants, she was without delay raised into a sitting posture, and after a brief interval of quiet she was perfectly restored.

Had not her attendants, as she informed Dr. Ringland, at once placed her in the erect position, she would have relapsed again and again into the fit. She, too, is so conscious of this necessity, that instantly on the subsidence of the fit she holds out her hands, as described, thereby indicating her desire for the requisite assistance. Should she at this time be handled roughly, or should the tender part of the spine or the coccyx be touched, she at once relapses into the fit.

She is not able until after the lapse of considerable time, and not even then without the greatest effort, to utter a single syllable, the peculiar condition excited throughout the system appearing in her case to attach itself more firmly to the tongue than elsewhere.

After the subsidence of the attack she is greatly distressed with tremors of the whole body, which last sometimes for only a few minutes, but at times continue for several hours.

Dr. Ringland, before concluding, made a brief summary of this singular case, directing attention to its leading characteristics and points of interest; especially to the previous existence of spinal irritation; the occurrence of the attacks in summer as well as in winter; the existence of consciousness during the fits; the erect position being necessary at the close of the fit, and neglect in this respect causing relapse; the loss of speech being prolonged after the subsidence of the other symptoms; and finally, to the fact that restoratives induced hysteria.—*Dublin Quarterly Journ. Med. Sci.*, Aug. 1855.

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13. *Severe Inflammatory Croup.*—Mr. MARTYN communicated to the Western Medical and Surgical Society of London, November 16, 1855, an interesting case of severe inflammatory croup, in which alcoholic stimulants, freely administered, rescued the patient, a child aged four years, from imminent death. It had just recovered from the effects of scarlatina. The croupy symptoms

became fully established in the course of twenty-four hours from first being observed. The fever was very high, and the obstruction to the circulation through the lungs very imminent, and the characteristic symptoms of croupy inspiration alarming. These symptoms were treated, as usual, with promptness and the ordinary remedies. The patient was put under the influence of tartar emetic and calomel, and a large blister was applied to the neck. The next day the symptoms continued as before, but towards evening the third stage, or that of collapse, became established. The face became dusky, and the skin covered with a damp perspiration, the mouth and lips purple and congested, and the efforts at respiration alarming. Under these circumstances the antimonial and mercurial treatment was omitted, and recourse had to stimulants. He was ordered half an ounce of brandy, diluted, and a less quantity at intervals of an hour, or oftener, if it could be swallowed; this was accompanied by the administration of the chlorate of potassa every hour, in combination with good nourishment. The next day, though the breathing was very laboured and difficult, the child was decidedly relieved. He continued to mend under the above treatment by brandy, though for some days the chest symptoms rendered his recovery doubtful. In the remarks which Mr. Martyn offered on the case, he considered that the time for the successful use of tartar emetic, &c., soon passed away, and that exhaustion soon waits upon the patient and demands the opposite kind of treatment. He considered that brandy was in every way preferable to any of the other stimulants used in the third stage of croup, as ammonia, senega, and the like; it had the advantage of being acceptable to children, and of producing more decided and permanent effects than any other stimulant. He was then led to make a few remarks upon the general lowering and evacuating treatment adopted in all acute diseases, the effect of which, in conjunction with the spare and starving diet, soon reduce the patient to such a state of exhaustion as to render him unable to combat the symptoms of disease. Should we not, then, recognize this element in all such diseases more readily than we do, and be ready at an early stage to administer alcoholic stimulants as soon as the evacuants employed have had fair play? Surely it is too late to delay their administration until exhaustion has too truly developed itself. Such stimulants do not augment inflammation, but maintain the vital powers whilst the natural sources of power, as nutrition, are cut off; and if stimulants do not directly combat inflammation, they surely, by supporting the system, give opportunity and fresh impulse to those vital forces that are always tending to subdue inflammations.

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14. *Investigations regarding the Formation of Cavities in Tuberculous Lungs.*—The prevailing opinion with regard to the mode in which cavities form in tuberculous lungs is, that after the deposition of the morbid product, secondary ulcerative destruction takes place, by which a breaking up of the pulmonary tissue is effected. Dr. Hiego Ruhle analyzes ten cases of phthisis pulmonalis, in which cavities were found, and concludes that they take their origin in dilatation of the bronchi; and that the ulcerative fusion of the parenchyma surrounding a tubercular deposit is, in the majority of instances, preceded by bronchiectasis. He finds that in proportion as the cavities diminish in size, the more unable we are to discover any limits between the mucous membrane of the bronchus leading into a cavity, and the membrane lining that cavity. The author is of opinion that the microscopic appearances of the membrane are not compatible with the view of its adventitious character. Moreover, the relation of the bronchus to the cavity is regarded as corroborative of Dr. Rühle's doctrine: "The cavities are always in direct communication with the bronchi, and only one bronchus opens into each of the cavities here alluded to, and the communication is not on one side, but the axis of the bronchus coincides with that of the cavity." The author does not inform us at what time the ulcerative process commences, but states, generally, that it ensues early, and that, although non-tubercular bronchiectasis may be accompanied by ulceration, the tubercular deposit possesses a peculiar power of exciting the ulcerative process in dilated bronchi.—*B. & F. Med.-Chirurg. Rev.,* Oct. 1855.

15. *Cases of Pharyngeal Abscess.*—Dr. Wm. Lochhead, of Glasgow, records (*Glasgow Medical Journal*, Oct. 1855) the two following interesting cases of pharyngeal abscess.

"*Case* 1.—On 1st April, 1855, I was called to an infant, aged six months, that was very much reduced by the discharge from abscesses, which had formed on various parts of the body, but which had now dried up. It was breathing with some difficulty, every inspiration being accompanied with a sound, as if the nasal passages were obstructed. On examining the nose, nothing could be found sufficient to account for the symptoms; neither was there any enlargement of the tonsils, nor indeed any morbid appearances, so far as I could observe, except that the mucous membrane was redder than natural, this being the only evidence of the presence of inflammation. The dyspnœa appeared to me to depend on some obstruction connected with the posterior nares, and not upon any inflammatory action going on in the organs of respiration, as the sounds of the chest were quite normal. I ordered the child to be placed in an easy posture, allowing it perfect liberty to move its head in whatever direction it seemed to be most at ease, while it was made to inhale the vapour from warm water, and had a blister applied to the nape of the neck. Next day, and indeed for several days afterwards, the breathing got very little worse. But on the 8th of April the symptoms were much aggravated, the breathing being accomplished with difficulty, and attended with a loud noise, the head thrown back, the face pale and anxious, and the mouth wide open, with great restlessness. On examining the throat minutely, there was observed the rounded form of an abscess, deep in the pharynx, situated in front of the fourth cervical vertebra. Its real position, however, could not be accurately ascertained, as retching was induced whenever the tongue was touched. I was satisfied that it was an abscess, from its having so suddenly assumed its present prominent position, nothing having been observed the day previously. Deeming the case now of sufficient interest and danger to justify a consultation, Dr. Lawrie was called in, who at once confirmed my views, both as regarded the nature of the case, and the immediate treatment to be adopted. The swelling being very deeply situated, and not easily brought into view, was with some difficulty reached; but by pressing down the tongue with the index finger of the left hand, a bistoury, guarded to within a short distance of its point, was thrust into the swelling, when there issued a copious discharge of pus, with instant relief to the little sufferer.

"On the 9th the dyspnœa had again partially returned, from the sac of the abscess having again filled. I did not, however, interfere until the symptoms were more urgent, thinking that the matter would soon find its way through the old opening. Early on the 10th I was summoned in great haste, as the child was said to be dying. I found all the appearances of impending suffocation more marked than ever they had been. So hastily, having guarded my abscess lancet, I proceeded to make a free incision into the tumour as far down as I could reach, when a large quantity of fetid pus was discharged, and complete and permanent relief followed. For a few days I emptied the sac occasionally, by pressing upon it with the finger; but from that time up to the 3d May the child has done well, and is at present in vigorous health.

"I ought, perhaps, to state that the patient had been put upon syrup of the iodide of iron, quinine, port wine, and every other means that could be thought of to improve the general health; but these means having nothing to do with the abscess under consideration, need not be enlarged upon.

"*Case* 2.—On the 2d of August, I was requested by my friend Mr. R. Renfrew to see a child, aged eleven months, with an inflamed submaxillary gland, which had been gradually subsiding under appropriate remedial measures. But as the dyspnœa seemed to increase, although the swelling was not so great, he thought there might be some inflammatory action going on in the larynx. On accurate examination, however, it was found to be a case of abscess in the pharynx. As the danger was not imminent, we agreed to defer interference until the swelling became more pointed. On the succeeding morning there was still no urgent necessity for interference, and as the breathing was not worse, we thought it better still to wait. In the evening the symptoms became more alarming, the dyspnœa very great, and the abscess more enlarged and prominent. As I found great difficulty in reaching the abscess, guided, as in the former case, by the index finger, I pressed down the tongue by means of a spoon, bent to nearly a right angle, which enabled me to see the tumour, and to open it exactly in the mesial line, and at its most dependent part, which had the subsequent advantage of allowing the sac to empty itself completely, without further interference, which certainly happened, as the case gave no further trouble.

"*Remarks.*—These cases of abscess do not differ essentially in their nature from abscesses in general, but derive their peculiar interest from their situation alone; and as, according to the adage, to be 'forewarned is to be forearmed,' I may save some of my professional brethren much anxiety by having given them a hint regarding the formation and means of diagnosis of abscesses in this region of the body, I have presented the details at what some may think a greater length than their importance demands. When, however, we consider the comparative frequency of inflammation in the air-passages and surrounding structures, more especially in children and infants, practitioners cannot be too well acquainted with every concomitant circumstance that may assist the diagnosis in each particular case. Indeed, no one who had not really seen such cases as those described could believe the difficulty in the diagnosis in the earlier stages of the disease. For my own part, although watching my little patient carefully for some days, it was only when the case reached its height that I was sure of its real nature. Many might think they had to treat a case of ordinary laryngitis, when the violence of the dyspnœa suggests a particular examination of the air-passages, and an abscess is discovered.

"As to the exact situation of the abscess, I believe, in both cases, that it was about the fourth cervical vertebra, or between the fourth and fifth; but it is difficult to fix its real position, as the movable pharynx ascends when the tongue is pressed down. But from the great obstruction which it causes to the respiration, it appears to be immediately behind the larynx.

"The treatment, when the real nature of the case is made out, is simple enough, viz: to open the abscess in the mesial line, and at the most favourable point for the free exit of the pus. In order to avoid the loss of blood, which is of importance when the child is weak, and to prevent the necessity for a second operation, I would not recommend the use of the lancet until the abscess became well defined.

"The causes of pharyngeal abscess may be found in that of abscesses in general, and, consequently, the prophylactic as well as remedial measures must be adapted to the exigency of each particular case. But as my object in this paper has been merely to call attention to the termination of the inflammatory process, and to put upon record these two cases, it is not necessary to go into the origin and history of this very rare and highly interesting affection."

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16. *On Certain Cases of Intestinal Obstruction.*—DR. JAMES PATERSON, in an interesting paper (*Glasgow Medical Journal*, July, 1855), makes the following useful practical remarks on this subject:—

"In ordinary circumstances, the normal action of the bowels is sufficiently provided for by the stimulant and lubricating effects of the bile and intestinal secretions, which have been poured into the canal to aid the digestive process; but where the relationship of the food on the one hand, and of the digestive juices on the other, has been disturbed, the function of the bowels becomes altered in proportion. In some instances, the character of the ingesta may be such as to provoke a superabundant flow of the digestive secretions, when a diarrhœa may result, and prove as effective in removing the evil as it is salutary. But, in the majority of instances, the opposite evil occurs. The secretions are thrown into the canal in quantities too small to insure the passage onwards of matters losing their own moisture and becoming excrementitious. Besides, being too dry in character, the food is, in all likelihood, such as, little by little, to overstimulate the liver, until it has become congested and sluggish, with a diminished excretion of bile. The portal system is necessarily too much loaded, and the reaction being traced backwards, is found to insure a diminution of the secretive action of the intestinal follicles. It is unnecessary here to allude to the sedentary habits, and other well-known external causes, so potent in inducing and perpetuating the condition of constipation; my present purpose will be fully served by calling attention to the internal changes, irrespective of the special causes which may have been at work in different individuals. In a majority of the cases in which the changes named occur, the different steps of the process of deviation from sound health are so insignificant, that, for a long time, they are unobserved; but, though delayed, the ultimate results are not the less certain. For a time—it may be for many months—the bowels are daily evacuated, and the individual believes that their functions are perfectly performed, the trifling dryness of the matters excreted not being such as to attract his observation. All the while, however, the feces have been accumulating, but so gradually as to have given rise to no disturbance. The evacuation of to-day contains part of what ought to have come yesterday, and so on, until the accumulation has become so considerable as to occasion the painful spasmodic attacks known as colic. In ordinary circumstances, a smart dose of purgative medicine and an enema are probably sufficient to remove the accumulation and to relieve the symptoms, and after a day or two the patient is as well as ever. Thus far the cases are sufficiently common in their occurrence, and have been often described with much minuteness; but those which follow present characters deserving of careful and special notice, and which—except in the place above noticed—have been overlooked amidst vague generalities.

"If, from the accumulation of residual matters being yet more gradual than usual, the acute symptoms have been delayed until the small intestine has its share of the load, the character of the symptoms is more urgent. The smallness of the opening leading from the ileum into the caput cæcum will explain how readily obstruction can occur there, even when the feces are but little removed from their natural consistence. To produce this obstruction, we require nothing more than that the cæcum should be somewhat loaded, and that the whole colon should be deficient in its contractility from long-continued distension. I may here remark, that I have never met with any case, having the more special characters, without obtaining a history of previous attacks of what seemed to be ordinary colic. These accumulations, then, on the one side in the cæcum, and on the other in the ileum, retard, little by little, the current in the already sluggish portal circulation, and one result is serous effusion into the sub-mucous tissue; chemical changes in the retained fecal matters occasion the evolution of various gases, which go to increase the distension; and, if continued long enough, these various sources of irritation will lead to inflammation of the parts. In most instances, however, the acute symptoms appear some time before there is any tendency to enteritis, so that this condition may probably be usually the result of neglect. While the *origo mali* has been quietly forming and acquiring potency, there has been no feeling of impending illness; a certain amount of distension may be present in the right iliac region, and yet the individual feels so well that its presence never costs him a moment's reflection. The appetite may be, nay, usually is, excellent, and when the symptoms supervene suddenly, as usual, great astonishment is expressed that any pain should occur while the system is in such perfect health. The attack is precisely like that of ordinary colic, but is much more sudden, and greatly more acute. The pain often appears to be excruciating, and remits but little. If asked to particularize the spot where the pain is chiefly felt, the patient will say that it is all over the abdomen, but examination shows that it is most severe in the right iliac region, and that, during the slight remissions, it is almost entirely restricted to this spot. The condition of the sufferer is sufficiently miserable; he can procure no sleep; there is generally sickness with vomiting of bilious matters; the tongue is swollen and indented, and is covered with a thin yellow fur; there is no appetite, and but little thirst; the urine is dark-coloured and thick, but may be unaltered; the bowels are generally reported to have been quite regular, or only slightly constipated. Amid all the pain, the pulse is calm and regular, and but little, if at all, quickened. On examination of the abdomen, a distinct fulness is felt in the right iliac fossa. The rounded form of the intestines can be felt, firm at the lower part of the swelling, but becoming softer in a direction radiating from this point. Continuous pressure displaces flatulence, and diminishes the size of the swelling, but it speedily resumes its original bulk when the pressure is withdrawn. The tumour is the seat of a constant pain, which is generally very acute, and there are frequent paroxysms of pain stretching upwards and across the abdomen. It is seldom that the comparatively local seat of the pain can be ascertained without a considerable amount of careful questioning, the frequent recurrence of the paroxysms having the effect of causing a belief in the mind of the patient that the pain is general. Such is an outline of the more common symptoms attendant upon this distressing malady.

"In commencing the treatment, it is often indispensable to allay the acute pain before trying to procure evacuation of the loaded bowels. Purgatives given at first, in such cases, often do no more than aggravate the symptoms. I have found an enema, with tincture of assafœtida and solution of morphia in thin gruel, to produce the happiest effect, being followed by a refreshing sleep of several hours' duration. In such circumstances, we must not be deceived as to the patient's condition, for he will declare himself quite well, and if the bowels have acted in the interval, we may too readily believe him; but we may still feel the swelling at the side of the abdomen, and may readily produce severe pain by even moderate pressure. The symptoms have been merely lulled, but will assuredly return with even greater violence, if the treatment be suspended. The curative treatment is probably best commenced by the injection of gruel in large quantities, by means of the long tube recommended by Dr. O'Beirne. After some hours, there may be passed some mixed scybalæ, with the effect of lessening the swelling and partially subduing the tenderness at the right side. The injection may now be repeated in the same manner, and the result may be the discharge, after some time, of a still larger amount of softish scybalæ. At this stage, we may properly administer purgatives by the mouth, and note carefully their effect. If they produce free discharges, and still further diminish the swelling, the symptoms will probably subside rapidly; but if the swelling enlarges, and there is much movement of flatulence from one part to another, while, at the same time, there be little or no evacuation, we have quitted the injections too early, and must again have recourse to them. In many of the less severe cases, I believe much benefit may result from beginning with mild purgatives at once, employing, at the same time, the common enema apparatus. A few drops of laudanum may be beneficially added to each dose of the aperient.

"The purgative that I have been in the habit of employing is the Epsom salts, which seems, when largely diluted, and combined with ten or fifteen drops of the diluted sulphuric acid, to answer the object in view better than most other cathartics. The dose should, generally, not exceed two drachms, dissolved in twelve or sixteen ounces of water, and may be repeated every alternate hour until the effect be produced. Given in this way, and especially if the patient be desired to drink freely of gruel during its use, the sulphate of magnesia seldom fails to occasion free watery discharges, an effect of great value, when it is desired to clear the intestines of scybalous matter. Besides being more effective, saline purgatives appear to cause much less abdominal pain and sickness, if the precaution to dilute largely have been observed. The time during which the purgatives and the enemata are to be continued must be regulated by the need which calls for their use; but, on the whole, it is better not to give much medicine by the mouth, but rather to continue the injections, until their purpose is sufficiently accomplished. One reason for this precaution is, that even when free evacuations have been repeatedly obtained, and we believe the canal to be quite free, there will still remain an amount of tenderness on pressure, easily aggravated by whatever may tend to irritate. For this condition a fly-blister is generally required, and has the effect of reducing the remaining fulness, and of removing the tenderness. Sinapisms do not seem to answer, at least there has not been much benefit derived from their use in my hands. Curiously enough, the bowels very often discharge freely large quantities of thin feculent matter, several hours after the application of the blister. The diet all the while should be such as to support the strength, and yet must be light and easy of digestion. With this object, beef tea, with bread, rice, sago, &c., may be given in small quantities, frequently repeated.

"These means, varied according to circumstances, form the essentials in the treatment of such cases, and, if commenced early enough, prove eminently successful. But where, on the contrary, delay has occurred until the parts have become inflamed, not only may the treatment of the obstruction require modification, but, in addition, the means calculated to subdue the inflammatory action must form a sequel to the steps already named. In cases of the latter description, the greatest care will be demanded, lest the obstruction should escape notice, for instances are not wanting where this has happened, the attention of the physician being directed solely to the obtrusively prominent symptoms of the enteritis. Symptoms of inflammatory action, with great abdominal tenderness, confined principally to the right side, may, with justice, raise a suspicion of obstruction in that portion of the intestinal canal. It is to this class of cases that the name *typhlitis* properly applies."

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17. *Intestinal Concretions.*—At the meeting of the Academy of Medicine of Paris, on the 14th of August, 1855, Mr. Cloquet placed before that body a series of preparations and drawings of intestinal concretions, and expressed himself as follows:—

"The concretions, found in the alimentary canal, may be divided into two classes. The first includes enterolithes in man, and bezoars in animals; both being the result of calcareous deposits secreted by the parietes of the intestines. The second class comprises abnormal masses, such as solids (animal or vegetable hairs which have escaped the process of digestion, and agglomerate to form ægagropilæ), pulverulent substances (magnesia with people who take it in excess), foreign bodies (kernels of fruit, biliary calculi, hardened feces), casein in subjects who use a milk diet.

"I have established a comparison between the first class, and those concretions which form normally with certain animals, by crystallization of a calcareous and magnesian salt, as in eggs, the crustacea, &c. With man, similar deposits may take place by a morbid state of the mucous or false membrane.

"In this drawing are seen the normal concretions in eggs with double shells, as in those of the ostrich, &c. Then we have the enterolithes found in man: here are two; one of them has caused the death of the patient, and was the result of a deposit of phosphate of lime around a pin which had stopped in the cæcum; the other is an ivory pessary, one portion of which has penetrated the bowel, and is incrusted with phosphate of lime, and the other portion reached the bladder, and became covered with lithic acid. Here is a deposit of phosphate of lime and magnesia formed around a wax bougie, which had been introduced into the vagina. Here are hardened feculent masses perforated in their centre, and leaving a canal through which natural motions and even diarrhœa took place. There are several specimens of bezoars; here is one with an irregularly mammelated surface, where holes are seen which correspond with internal subdivisions. Amongst the number of bezoars now exhibited, one may be observed, in the interior of which the iron extremity of a spear is seen. Here is one from a horse, the nucleus of which is formed by a piece of brick; the surface is rugose and eroded, as if it had been acted upon by the secretions of the stomach.

"I now pass on the ægagropilæ. Here is a plate of a vesical calculus found in an English lady, the nucleus being formed by hairs. Here is a concretion composed of adipocire and crystals of phosphate of lime, formed around hairs of a light colour; it was found in the uterus of a woman of fifty. Here is an ægagropila coming from a lion affected with scabies; these are generally found in animals who lick themselves; with human beings they are only found in insane people. A boy and girl, who were in the habit of swallowing their hair, have had such concretions. The hairs of marine plants may thus become agglomerated, but less regularly than by the vermicular motions of the intestines.

"Bits of straw or some hay may become nuclei; here is one composed half of vegetable matter and half of oxalate of lime. We have in this plate a representation of a muslin veil swallowed by a young horse, which became incrusted with saline matter and vegetable fibre. I would remark, in conclusion, that with birds of prey, especially of the nocturnal variety, normal ægagropilæ may form, as the bones and hairs swallowed by these birds become rolled in a bolus, and are rejected after digestion by means of a regurgitation, which is very similar to rumination."

18. *On the Communication of Syphilis by Vaccine Lymph.*—The question of the influence of syphilis upon vaccination is one of importance; the opinion is very wide spread among the laity, that vaccine lymph taken from an unhealthy child generates disease. A case in point has lately occurred in Bamberg, a town of Bavaria, where a medical man was condemned to two years' imprisonment for having vaccinated several children from a child exhibiting a syphilitic eruption on its face and body. The witnesses asserted that the vaccine pustules had not been properly developed, and were followed by tedious ulcerations. Moreover, nine grown-up persons were asserted to be reinfected by the children tainted through the vaccine pustule. The judgment was commuted in consequence of the opinions expressed by Messrs. Heyfelder and Pauli, two distinguished medical men of Rhenish Bavaria, whose judgment has been supported by that of Ricord and Cullerier, who utterly deny the possibility of communication of the syphilitic poison by the agency of vaccine lymph. Cullerier, according to the *Bulletin de Thérapeutique*, from which we extract these facts, states that he has not only vaccinated syphilitic children without ever seeing the vaccine in any way modified by the syphilitic diathesis, but that he has vaccinated healthy children from syphilitic infants without ever perceiving the slightest unpleasant results. The Société de Chirurgie, through their reporter, M. Brocas, have pronounced absolutely in favour of the views of Messrs. Ricord and Cullerier.—*B. & F. Med.-Chirurg. Rev.*, Oct. 1855, from *Bull. Gên. de Thêrap.*, July, 1855.

SURGICAL PATHOLOGY AND THERAPEUTICS, AND OPERATIVE SURGERY.

19. *Secondary Inflammation of the Joints.*—Mr. Coulson read before the Harveian Society (May 17, 1855) a paper on this subject.

These inflammations, he said, occur during the course of other disorders. They are not accidentally associated with them, but evidently connected by some peculiar link with the primary affections, as is shown not only by the peculiar characters of the secondary diseases, but by the frequency of their occurrence during the course of the primary affection. The term "secondary inflammations" is applied by the author to these diseases of the joints in order to leave open the question of their nature; but he is disposed to affirm that more accurate and extensive investigations will enable us to ascend one step higher, and trace them all to blood-poisoning. Having related the details of a case of gonorrhœal rheumatism, the author observed that the points of most interest in connection with these secondary inflammations of the joints are: 1st. What are the primary diseases with which they are allied? 2d. What is the nature of these secondary affections? are they of rheumatic origin, as the name given to them generally would lead us to suppose, or are they specific inflammations? 3d. If specific inflammations, does each group acquire its specific character from the primary disease on which it depends, or can we trace the whole class of secondary joint affections to one general law, giving to all the same character independently of the particular disease from which the group appears to originate? According to the author, the chief primary diseases or conditions with which these secondary inflammations are connected may be divided into seven groups. They are—1. The puerperal stage, giving rise to puerperal rheumatism. 2. Exanthemata, especially smallpox and scarlatina, producing inflammations of the joints generally attributed to rheumatism. 3. Injuries to the genito-urinary apparatus of the male. 4. Gonorrhœa, followed by so-called gonorrhœal rheumatism. 5. Animal poisons, especially that of glanders. 6. The state of new-born children. 7. Injuries, amputations, &c., followed by purulent inflammation of the joints. In speaking of puerperal rheumatism, the author pointedly alluded to the error committed by many writers, who join the name of rheumatism to the articular affections which occur in puerperal females. These differ from true rheumatism in every essential particular—in the general and local symptoms, in the course, in the result, and in the effects of remedies. The general symptoms of acute rheumatism are inflammatory; those of puerperal arthritis are eminently atonic. Besides this, the general symptoms which accompany the articular affections of puerperal women do not belong to the joint diseases; they do not correspond to any known class of fevers, but they depend on a peculiar state, which has been traced to purulent infection of the blood. The general signs of the rheumatic diathesis are absent in these and other cases of an analogous kind—a circumstance which should be decisive of the question. The course of the two affections is different; although the local symptoms are much less violent in puerperal arthritis, it runs a much more rapid course than rheumatism, however acute. The local symptoms are altogether disproportionate to the effects produced on the joint—supposing the disease to be rheumatism. Acute rheumatism hardly ever ends in suppuration; whereas effusion of pus within the cavity of the joint is the main character of the puerperal disorder. The results are different; for rheumatism of the joints, *per se*, never proves fatal; whereas nearly all the cases in puerperal women terminate in death. Remedies, therefore, produce no effect in the latter diseases; while rheumatism, in all its forms, is amenable to treatment. Puerperal arthritis may occur after parturition, or after abortion, during the early period of pregnancy. It may, or it may not, co-exist with puerperal fever; and hence the great diversity of general symptoms observed in different cases. Sometimes the articular disease is merely one of the effects of uterine phlebitis, the general symptoms being those of purulent infection of the blood. In other cases we have uterine phlebitis followed by puerperal fever, and complicated with purulent absorption. Here the two orders of general symptoms—viz: those of puerperal fever and those of purulent infection co-exist. The secondary puerperal inflammations of joints have a tendency to run a very rapid course. The purulent effusion sometimes occurs within a few hours after the first symptoms of pyæmia. Several joints are attacked in succession. The cartilages are apt to suffer, being often softened, abraded, or absorbed. Effusions of pus often exist around the joint, and in the centres of the muscles; and the limb is frequently affected with an œdematous swelling, which much resembles phlegmasia dolens. In the great majority of cases, the inflammation is purulent; more or less pus is effused within the cavity of the joint, and the synovial membrane is injected, though it may happen that the injection is very slight. In other cases, the purulent deposits take place outside the joints. In a few cases, the articular inflammation is non-purulent, although deposits of pus are formed in the neighbouring muscles. Finally, in some cases, the inflammation of the joints is simple and slight, terminating of its own accord in a few days. The next group noticed by the author, is that connected with injuries to the genito-urinary system of the male. The secondary affections of this group are usually purulent, though often simply inflammatory. The pus deposits exist very often exterior to the joint, as often perhaps as in the joint itself. The course of these inflammations is irregular; in some cases they are very acute; in others, the series of attacks, though sub-acute, is spread over a long period of time. Here the pyæmia appears to be of a chronic kind; and the secondary articular affections may terminate favourably. It is remarkable that many of these diseases appear to be produced by mere irritation of the urethral membrane; but Mr. Coulson thinks that, in such cases, ulceration or phlebitis has existed in some part of the genito-urinary system, the irritation merely acting as an exciting cause of absorption of the pus. The articular disease, improperly called gonorrhœal rheumatism, is next considered; after which the author notices the well-known group connected with wounds and injuries. Inflammation of the joints connected with blood-poisoning from the introduction of certain animal poisons is then described. Mr. Coulson connects this group with glanders, the only poison whose effects on the joints has yet been studied. The articular inflammation which appears during the course of glanders is generally purulent, though sometimes simple. Its principal character is chronicity; the blood seems to be affected by many successive poisonings, and hence perhaps the reason why the articular inflammation is occasionally simple, although the primary disease is essentially purulent. The secondary joint diseases connected with smallpox might be placed in the preceding group; but, in compliance with received opinions, the author classes them under the exanthemata. These variolous inflammations are sometimes purulent; but they are commonly slight, and terminate spontaneously in a few days. Scarlatina is also attended by a peculiar inflammation of the joints, which has latterly attracted much attention, although its history is still obscure. Many physicians persist in regarding it as rheumatic; but while Mr. Coulson admits that epidemic rheumatism may co-exist with epidemic scarlatina, he believes that most of the cases which have been described as rheumatism are really secondary inflammations of the synovial membrane, of the kind described in this paper. From these considerations, the author is disposed to infer that the seven groups of secondary inflammations of the joints, which he has described, may be all referred to one specific cause—viz: infection of the blood. Moreover, he attributes five out of the seven to purulent infection of the blood; while he attributes variolous and gonorrhœal inflammations to the same cause, though with a certain reserve, as not yet fully established. The circumstance of these inflammations being often simple, Mr. Coulson says, is not conclusive against their connection with blood poisoning, because the articular inflammation consequent on pyæmia is not invariably of a purulent nature.

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20. *On Subcutaneous Wounds.*—M. Bouvier, after reviewing the condition of our knowledge with respect to subcutaneous wounds, lays down the following propositions: 1. Subcutaneous, like all other descriptions of wounds, are the source of traumatic irritation, and induce a local inflammation, with which is connected the mechanism of their cure. 2. They are especially characterized by the slight degree of inflammation and irritation they occasion, and the immediate cicatrization, unpreceded by suppuration, which is the consequence. Hence the advantages which different surgeons have, since 1816, recognized as attaching to subcutaneous operations, and, in particular, those having for their object the section of tendons or muscles. 3. The occlusion of subcutaneous wounds, completed in their second phasis, or after the healing of the puncture in the integuments, gives rise to their relative innocuity and mode of cicatrization, by applying the tissues one against the other, excluding the contact of all foreign bodies, and multiplying the relations of the organizable liquid or blastema with organized and living matter. 4. Suppurative inflammation is excited exceptionally in subcutaneous wounds, in consequence of accidental local irritation, too considerable an effusion of blood, or defective occlusion of the wound, which then falls into the class of traumatic lesions having communication with the exterior. 5. The cicatrices of the various tissues in subcutaneous wounds healed by immediate organization, do not differ in their nature from those which succeed to many suppurating wounds. The formation of pus is only detrimental to the production of perfect cicatrices under certain conditions.

In respect to this last position, we may extract a few of M. Bouvier's remarks:—

Among the circumstances that influence the perfectibility of cicatrices—*i. e.*, the reproduction of the injured tissue—are, the kind of wound, the situation of the divided parts, and the mode in which the healing is effected. Thus, in wounds with loss of substance and of large surface, in which the tissues implicated form separate masses that are entirely exposed, the reparation is usually limited to the production of a cutaneous cicatrix, with some rudiments of cicatrix proper to the other tissues. But if the wound, though an exposed one, be extensive rather in depth than in superficies, the tissues occupying the deeper parts may become united by cicatrices proper to them, independently of the new skin destined to close the entry of the wound; and such union is even possible when the two sides of the divided tissues are not in actual contact, providing the separation be not too considerable. The distance within which this is possible, and the length of cicatrices that can be thus formed, vary in different tissues.

Suppuration of even deep wounds exerts two kinds of influence on the reparation of tissues other than cutaneous: 1. If the suppuration be so abundant that the extremities of the divided tissues float in pus, and the neighbouring tissues are destroyed around them, consecutive union is very imperfect, or does not take place at all. 2. Even in the absence of such unfavourable conditions, intense, extensive, or prolonged suppurative inflammation, may impair the regularity of the reparative action by accidental adhesions, and by the fusion and induration of the different tissues, which it determines far more easily than does the moderate and circumscribed inflammation of subcutaneous cicatrizations. Still, this is only exceptional and accidental in the healing of deep-seated wounds. Far more numerous are the cases in which, in spite of the suppuration, the vacancy in each tissue is definitively filled up by cicatricial tissue similar to that which is supplied in non-suppurating wounds. That this is the case with osseous tissue is familiarly known; and the facts in relation to tendinous tissue, though less known, are no less real, as the writings of Ammon, Blandin, and M. Bouvier himself, amply testify. Under the above-mentioned conditions, also, the nature of the substance intervening between divided muscles is the same, whether there be suppurative inflammation or not. The subject of the reunion of nervous tissue is still a matter of dispute: but it has not been demonstrated that the absence of suppuration, *cæteris paribus*, renders the union more complete, or is the sole condition necessary for reproduction.—*B. & F. Med.-Chirurg. Rev.*, Oct. 1855, from *Archives Générales*, t. vi.

21. *On the Real Origin of Varicose Veins of the Lower Extremities.*—M. VERNEUIL lately read a paper before the Academy of Medicine of Paris, on the above subject, in which he endeavoured to make out the following points:—

1. Whenever varicose veins which have sprung up spontaneously are observed on the lower extremity, there are deep veins similarly affected in the corresponding part of the same limb.

2. The converse, however, does not hold, for the inter- or intra-muscular veins may be found dilated, without any change having taken place in the superficial vessels. But when the deep veins alone are found in an exposed state, it is almost certain that sooner or later the superficial ones will in their turn swell, become tortuous, and very apparent under the skin.

3. The varicose state of the veins of the lower extremity, as it is usually seen, does not primarily arise from the subcutaneous vessels (the internal saphena not excepted), but generally from the dilatation of the deep veins, and most often from the muscular veins of the calf of the leg! The deep veins are first affected with valvular inefficiency and dilatation, and these two lesions then spread to the super-aponeurotic branches of the second and third order.

4. This succession of phenomena is not only made manifest by simple dissection, but also by a careful study of the special arrangement of the venous system of the lower extremity.

5. These facts, which may be looked upon as a new discovery, throw much light on the whole subject of varicose veins of the lower extremities. The etiology and symptoms of the affection are thus elucidated, and this circumstance allows of a more rational choice of therapeutical means.

6. The mechanism of relapses will henceforth be more easily understood; for it must be confessed that the obstinate return of the complaint, which experience shows to be so frequent, has been explained more by a train of reasoning than by direct demonstration.

22. *Cancer of the Pulmonary Artery.* By Prof. A. Wernher, of Giessen.—The following case of cancer of the pulmonary artery presents some interest in reference to the question of the mode of propagation of cancerous affections:—

Case.—Ch——, a servant, aged 22, placed himself under M. Wernher's care on the 22d January, 1853. In his childhood he had suffered from several cerebral affections. His present disease was of three months' standing, but he said he had often, during the last year, experienced, especially in dancing, painful sensations in the thigh and knee, which he attributed to chills.

In the preceding autumn he had had attacks of angina and of swelling of the calf of the left leg. After these symptoms subsided, a small tumour, hard and but slightly painful, and to which he paid little attention, appeared at the inner side of the tibia. The tumour increasing rapidly, the patient made use of ointments and various other topical applications, but without success, for in the space of three months the swelling attained a considerable volume; two punctures had been made, but gave issue to nothing but blood; the tumour soon became painful, and the patient lost strength, and visibly emaciated.

On his admission into hospital the skin was hot and dry; the pulse small, from 120 to 140; his sleep was disturbed, being interrupted by pain; his appetite was good; the tongue was slightly loaded; there was some constipation; there was no enlargement of the liver; he had frequent attacks of epistaxis. From the time of his admission he had some cough, attended with dyspnœa and pain in a particular point at the left side. The left knee was bent almost at a right angle, and was nearly immovable. The region below the condyles of the femur and the patella was occupied by a knobby tumour, the greatest circumference of which amounted to 99 centimetres (38.9 inches), and which extended to the middle third of the tibia. The skin covering the tumour was tense and shining, covered with spots of a reddish yellow, and here and there exhibited varicose veins and networks of finer vessels; the temperature of this region was sensibly elevated. The tumour was elastic, hard in some parts, soft in others, particularly where the vessels were developed, but it presented no fluctuation. It was the seat of spontaneous shooting pains, particularly at night, and pressure also excited pain. The inguinal glands were scarcely swollen; no tumour was perceptible in the abdomen.

The tumour was considered to be a medullary fungus of the tibia which should speedily prove fatal, and amputation was proposed, but was at first refused. However, the disease continuing to progress, the patient submitted to the operation, which was performed on the 7th of February, in the upper part of the thigh.

Some days before, the patient suddenly experienced a severe pain in the region of the heart, with dyspnœa and acceleration of the respiratory movements; subsequently, he had cough and bloody sputa, very rapid pulse, &c.

The frequency of the pulse diminished after the operation, as well as most of the symptoms; but the chest soon became more engaged, as was indicated by cough, dyspnœa, bloody, purulent, and fetid sputa; miliary eruption, collapse, &c.

The patient died on the 24th of February.

The examination of the tumour showed, as had been diagnosed, a medullary fungus of the tibia.

The author gives a description of the elements of the tumour, with figures, representing their form and disposition. The autopsy was performed seven hours after death.

The veins of the stump were perfectly healthy, and did not present the slightest trace of phlebitis.

The right lung exhibited in its middle part an enormous gangrenous abscess filled with a fetid ichorous matter; another similar, but smaller abscess was found in its inferior portion.

The rest of the parenchyma was healthy; but on incising it, little knotty cords, having the appearance of cancerous matter, were seen to protrude from the orifices of the vessels.

A preparation of the vessels of the lung, made with the greatest care, showed that these cords existed only in the pulmonary ramifications; nothing similar was found in the veins. The cords in question, which obstructed the bore of the vessels without adhering to their walls, were of a dull white colour, nearly resembling that of half-boiled rice; knotty, gyrose, and transparent at the edges. Each of the stronger cords was composed of several others; these little cords were twisted, but separated easily without the aid of any instrument.

In the right lung all the ramifications of the artery, with few exceptions, were obstructed by these cancerous masses; there were fewer in the arteries of the left lung.

It was chiefly in the vicinity of the large abscess that the smallest vascular ramifications were completely stopped.

The points in which the cancerous matter had commenced to deposit could be observed; the smallest vessels which contained it were from a third to half a line in diameter; beyond that point they were gorged with blood; in this part they presented a sudden dilatation, and this, combined with their hardness, indicated the presence of the deposit.

The capillaries were entirely free; the same was true of the parenchyma of the lung beyond the vascular ramifications; no kind of tubercle was found in it.

Microscopic examination showed that the cords were composed of cells, analogous in their forms and dimensions to those of incipient cancer, being large and oval, with a single or double nucleus; on the surface of the cords were found caudate cells, arranged in several layers, and even forming an epithelium.

The same elements of cancer were found in the blood of the inferior cava, and in great quantity (oval or caudate, isolated or agglomerated).

In no other part of the body, notwithstanding the most careful examination, could any purulent or cancerous deposit, or any abscess, be found.

This case is remarkable, chiefly because it shows the direct transfer of the cancerous matter, by the venous blood, to the very extremity of the vascular tree. No general cancerous infection existed; the cancerous cells, detached doubtless from the principal focus, had been conveyed with the blood and deposited in the branches of the pulmonary artery, and had there mechanically accumulated to such a degree as to obstruct these vessels. It is to this accumulation that we must attribute the symptoms of which the lung was the seat.

We must not, however, deduce from this particular case a general theory of the mode of transmission of cancerous affections, as the author appears disposed to do. It is certain that the elements of cancer must necessarily impart injurious qualities to the blood, and it is, in fact, this infected blood which, diffusing itself in all directions, finally produces new local affections.

Lastly, we would remark that the denomination of cancer of the pulmonary artery given by the author does not appear to us to be accurate; he himself states that the cancerous masses were free in the vascular tubes; these latter consequently were not diseased, and it does not appear from the details of the autopsy, that they were altered in their proper tissue. We are, therefore, justified in considering the cancerous masses contained in the vessels as being derived from the primary focus and transported directly towards the extremities of the venous tree, and it is thus that the author himself regards them.—*Gazette Médicale de Paris*, Oct. 27, 1855, from *Henle und Pfeufer, Zeitschrift fur Rationelle Medicin.*

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23. *On the Influence of Circumcision in Preventing Syphilis.*—By JONATHAN HUTCHINSON, Esq., Surgeon to the Metropolitan Free Hospital. The Metropolitan Free Hospital being situate in a locality in which many Jews reside, its out-patients' rooms furnish a good field for estimating the relative prevalence of different diseases amongst them and others. The following statement of my past year's experience as to venereal diseases, appears to have some importance, and I am induced to communicate it at the present time with especial reference to a paper which appeared in the *Medical Times and Gazette* of the 17th, from my friend, Mr. Cooper Forster, recommending the more general practice of circumcision as preventive of certain diseases of childhood. My Jew patients have, I believe, been in proportion of nearly one-third to the

others. The subjoined table shows the proportion of the two classes of venereal disease.

	Total of Venereal Cases.	Gonorrhœa.	Syphilis.	Proportion of Gonorrhœa to Syphilis.
Not Jews . . .	272	107	165	0·6 to 1
Jews	58	47	11	4·3 to 1

Thus we find that, notwithstanding a gross proportion of nearly one-third to others, the cases of syphilis presented by Jews are only as one to fifteen. That this difference is not to be accounted for, either by their superior chastity, or by their unwillingness to seek medical aid for such diseases, is conclusively proved by the fact that they furnish very nearly half the cases of gonorrhœa. The circumcised Jew is then very much less liable to contract syphilis than an uncircumcised person. This conclusion has, I believe, been long entertained by many surgeons of experience, but I am not aware that it has ever before been made the subject of demonstration. No one who is acquainted with the effects of circumcision in rendering the delicate mucous membrane of the glans hard and skin-like, will be at a loss for the explanation of the circumstance.

Taking then this fact as established, it suggests itself as probable that circumcision was by divine command made obligatory upon the Jews, not solely as a religious ordinance, but also with a view to the protection of health. Among them promiscuous intercourse was certainly not regarded in the heinous light which it is under the present dispensation, while polygamy and concubinage were openly permitted. One is led to ask, witnessing the frightful ravages of syphilis in the present day, whether it might not be worth while for Christians also to adopt the practice. Such a proposition, if intended only to protect the sensualist from the merited consequence of loathsome vice, would, it is to be hoped, be dismissed at once by every right-thinking man. But the matter is much wider. In syphilis the innocent suffer with the guilty, and the wife and the children often have to bear the penalty of the sin of the husband and father. During the period from which the statistics just adduced have been obtained, I have had under care at the hospital a total of 252 children, under the age of 5 years. Of these 179 have been of Christian parentage and 73 of Jewish. Among the former have occurred 27 cases of congenital syphilis, while among the latter there have been but 3. Thus it would appear that but one-twenty-fourth of the surgical diseases of Jewish children acknowledge a syphilitic cause, while no less than one-sixth of those of Christians are of such origin. In this calculation I omit altogether the numerous diseases which are, in all probability, remotely dependent on syphilis, and comprise those only which present the disease in a well-marked form. The same inferences are pointed out by counting the proportion of syphilis cases in women. Of a total of 97 women who have, during the year, come under treatment for one or other form of venereal disease, 92 have been Christians and 5 Jews. Of the 91 of the former, no fewer than 61 have suffered from syphilis, and at least two-thirds of these have been married women, who, there was every reason to believe, had contracted the disease from their husbands without any fault of their own. With regard to its being the duty of the surgeon invariably to remove the prepuce of infants born with congenital phymosis, which Mr. Forster, in the paper referred to, so ably points out, I have long held a similar opinion with his own. That opinion, together with some reasons for it, are recorded at page 415 of the *Medical Times and Gazette* for October 23, 1852.—*Med. Times and Gaz.*, Dec. 1, 1855.

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24. *The non-mercurial Treatment of certain forms of Syphilitic Disease.*—Mr. Henry Lee read a paper on this subject before the Medical Society of London, Nov. 10th, 1855. He began by stating that the opinions of men of eminence should not form rules of practice, except those opinions could be corroborated by well ascertained facts; and in alluding to the treatment of syphilis, he showed how diametrically opposed had been the opinions of the mercurialists, and non-mercurialists. He (Mr. Lee) thought that the different kinds of syphilitic affection, from which these authors originally took their opinions, might ac-

count for the different treatment which they seem to have been inclined to adopt without discrimination, in all cases. He considered, for his part, that there are distinct morbid actions produced by the application of the syphilitic poison, which actions might be divided into four classes. These had been mentioned in a former paper, and required distinct methods of treatment. The first class referred to the syphilitic ulcer, presenting adhesive characters, the globules of the pus exhibiting a smooth outline: the second included those cases in which the secretion from the infected part consisted of well-formed pus from an early period; the third class was that in which the local disease extended to the lymphatic vessels, and in which the glands consequently suppurated; and the fourth where the contact of the syphilitic matter produced mortification or phagedæna of the part to which it was applied. The author had proved, on a former occasion, the truth of the proposition enunciated in the third class, supporting his opinion by forty-nine cases, in which suppurating bubo was a symptom. As he had failed at that period to convince some of his hearers, he had again put this proposition to the test of experience, and had caused statistical tables to be drawn up, including all the patients treated at the Lock Hospital. These tables are extremely elaborate, and, from their analysis, Mr. Lee concludes that those sores which infect the patient's constitution are not often accompanied by inflammation of the absorbents; and that when they are, this inflammation may be traced to some accidental complication. Hence the author lays it down as a practical rule, that when a primary ulcer has clearly given rise to an inflammatory bubo, there will be no infection of the patient's system from that disease; and inasmuch as the local disease will, in general, heal as soon without mercury as with it, and will not be more likely in the one case than in the other to be followed by secondary symptoms, such a mode of treatment is, as a rule, unnecessary, if not injurious. Mr. Lee, in referring to some of the other classes above mentioned, came to the conclusion that there are three of them which do not require mercury:—

1. Those accompanied by lymphatic inflammation.
2. Those in which the inflammation produced by the contact of the poison terminates in mortification, which latter may be either superficial or deep.
3. Those in which the poison gives rise from the commencement to suppurative inflammation.—*Med. Times and Gaz.*, Nov. 17, 1855.

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25. *Empty Hernial Sacs.*—It is to the study of hernial sacs, long since deprived of the herniæ they formerly contained, that M. Chassaignac directs attention, and particularly to their simulation of strangulated hernia. There are but few examples on record of this curious variety of false hernia, and he furnishes full details of six carefully observed cases, illustrative of the difficulties their diagnosis gives rise to. The conclusions which he thinks may be drawn from so limited a number of observations are as follows: 1. Peritoneal diverticula, the receptacles of herniæ that have not been reproduced for a very long period, are susceptible of giving rise to the symptoms of strangulated hernia. 2. There is a great difference in the effects of such strangulation, according to whether the peritoneo-saccular communication still exists, or is obliterated. In the first case, the symptoms may be nearly as urgent as in ordinary strangulated hernia, while in the latter they are much more moderate, they now being, so to say, like ordinary cysts in their effects. 3. The taxis may be inoperative in causing the reflux of the fluid contained in the sac, although a free communication between the sac and the peritoneal cavity may be afterwards proved to have existed. 4. Old hernial sacs may contain fluids of different natures, such as serosity, blood, or pus. 5. In all the examples hitherto met with, strangulation of the sac has occurred in females. 6. Almost all the subjects of this strangulation have prior to, or at the time of, its occurrence worn trusses. 7. When we reach the sac of a false hernia, we should endeavour to confirm our diagnosis by an exploratory puncture. The evacuation of the fluid induces such a flattening of the sac, that doubt can no longer be entertained as to the absence of visceral contents. 8. In searching for the peritoneal communication, we must not be content with exploring by means of the finger, but must have recourse to a round or grooved director. 9. Excision of the sac constitutes the best treatment.—*Revue Méd.-Chirurgicale.*

26. *On Certain Forms of Fistula in Ano, with reference chiefly to their Treatment without dividing the Sphincter Muscles.*—Mr. Hird read, Oct. 20th, before the Medical Society of London, a paper on this subject, and also gave his opinion in favour of the treatment of many special cases of complete fistula by means of the ligature. After alluding to the painful and hazardous operations practised by surgeons for the cure of fistula until a more correct view was taken of the disease by Percevall Pott, by whose influence and example the barbarous treatment at that time had recourse to was renounced by the profession in this country, the author gave a minute description of the anatomical structure of the lower part of the rectum, and of the tissues which fill up the ischio-rectal fossæ, and observed that may obscure collections of matter can only be diagnosed by those who are familiar with the complicated fascial and muscular boundaries of the space surrounding the extremity of the gut. Mr. Hird then described the varieties of spontaneous abscess which affect this region, and gave the result of several cases of fistula which had not entered the rectum, or laid bare its walls, in which no operation was performed; and strongly opposed the assertion made by Mr. Syme, and many other surgeons who have written on this disease, "that all remedial measures, except the knife, are ineffectual." As a preventive treatment against the formation of fistula, he urged the necessity of freely laying open all abscesses in the neighbourhood of the rectum before the walls of the bowel are laid bare. The incision should be directed from before backwards, and not transversely, so that the discharge may have no mechanical difficulties to overcome in its exit. When the abscess does not close by the ordinary process of granulation, Mr. Hird advises the use of mild injections of nitrate of silver (four grains to the ounce), and the application of well-adjusted pressure on the part. In two cases of eight and ten years' standing in which this treatment was not successful, he effected a cure by means of a platinum wire heated by electricity, and connected with the poles of a galvanic battery, similar to the one used by Mr. Marshall for applying electric cautery to fistulous openings in the cheek, and advises the use of this agent before resorting to division of the septum. In cases of complete fistula, the author has no confidence in any treatment except that of laying the cavity of the abscess and of the rectum into one by dividing the sphincters. This, he said, might be accomplished either by means of the knife, the ligature, or electric heat. Although the knife is the favourite instrument of the majority of surgeons, he prefers the use of the ligature in all cases where the hemorrhoidal veins are unusually large, or when the patient has a dread of the knife. He considers also that this method of operating possesses advantages over the knife in many special cases, and, if judiciously applied, and only tightened by means of the fistula-tourniquet to a degree of tension sufficient to accomplish the division of the septum, is not so painful as the operation with the knife, less so in the after-treatment, and frequently accomplishes a cure in a shorter space of time. Hemorrhage and the dread of a cutting operation are avoided by this plan. Mr. Hird's experience does not confirm the opinion of Sir B. Brodie, that all fistulæ have an internal orifice leading into the rectum; neither do his observations verify the opinion of many writers, that fistulæ are most frequently found in phthisical patients; but, on the contrary, are in harmony with the views of Andral and Louis, both of whom demonstrate, by statistical inquiries, that these affections, occurring simultaneously in the same individual, are merely the result of accident, and that they do not stand to each other in the relation of cause and effect.—*Med. Times and Gazette*, Oct. 27th, 1855.

27. *Dislocation of the Humerus backwards into the Infra-spinous Fossa.*—Dr. Maurice H. Collis relates (The *Dublin Quarterly Journal of Med. Science*, Aug. 1855) an interesting case of this extremely rare dislocation, which presented itself to him in October, 1851, at the Meath Hospital.

"The subject was an old woman, very thin, with weak flabby muscles. The accident occurred thus: as she was walking along the pathway, with a bundle under her arm, she slipped off and fell forwards on her shoulder; she immediately came up to the hospital, feeling that her shoulder was hurt.

"Upon stripping the shoulder the very remarkable symptoms of dislocation backwards were at once readily perceived. In place of the natural rounded prominence in front, there was a deep depression or pit, into which the finger could be pressed; there was flattening of the shoulder on the outer side, below the acromion, and a large rounded prominence was felt at the back of the scapula, below the spine. This prominence was subcutaneous, and was easily ascertained to be the head of the bone, upon rotation of the arm. The elbow projected forwards and a little out from the side; the axis of the limb ran from the prominence above mentioned downwards and forwards; the length of the limb, from the tip of the acromion to the point of the elbow, was not altered. The patient was either unable or unwilling to attempt motion of any kind, and when desired to do so she moved the scapula on the trunk. We were, however, able to rotate the arm freely, to approximate it to the side, and to bring it forward. We could not raise it or bring it in a backward direction without rotation of the scapula. In our manipulations we experienced no difficulty from the occurrence of tumefaction or effusion, owing to the recent nature of the accident, nor did the patient complain of much pain. The dislocation was readily reduced. Mr. George Porter made extension by raising the arm to a right angle with the body, and drawing it outwards and slightly forwards, at the same time rotating it. I fixed the scapula with the palms of my hands, and made pressure on the displaced head of the bone; with very slight effort the bone returned to its natural place, and the symptoms of dislocation disappeared. The patient recovered the use of her arm at once, and did not return to the hospital.

"All surgical authorities are agreed upon the extreme rarity of this form of dislocation—not more than eight or ten being on record. Boyer attributes this rarity to the fact that muscular action has no part in bringing about this dislocation. According to him the accident occurs by a fall on the side with the arm extended and advanced; and it will require a very considerable force to be applied to the elbow before the bone can be thrust outwards or backwards; it is manifest, however, even when the accident occurs in the manner described by Boyer, that the action of the muscles, which attach the scapula to the trunk, largely assist in producing the dislocation. By these muscles the scapula is fixed, while at the same moment the humerus is converted into a powerful lever of the first order. Its centre rests on the side of the chest, the violence is applied at the elbow, and it is only when this violence is sufficient to rupture the capsule, and overcome the action of the muscles about the capsule, that dislocation can occur. The muscles which fix the scapula assist in causing the accident, for if the glenoid cavity were not fixed by them, the violence applied to the elbow would cause it to follow the head of the bone in its movements, and render dislocation impossible. The possibility of dislocation by a direct blow on the front of the shoulder does not appear to have struck Boyer, nor do I well know how to account for its producing dislocation in the present instance, unless by supposing that the glenoid cavity was altered by age and rheumatic disease. It is well known, these causes are sufficient to flatten the cavity, and give it a greater breadth in the backward direction. In the London Medical Gazette for 1833 a somewhat parallel case will be found, in which an old woman, falling on the front of the joint, dislocated it backwards. From the feel of the joint, when reduced, both Mr. Porter and I were of opinion that the dislocation would be easily reproduced; the patient, however, never returned to the hospital, and we are ignorant of her subsequent history. I have thought it right to put the case on record, as the accident is rare; but I regret that I am not able to throw more light upon what may be called the mechanism of its occurrence."

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28. *Treatment of Fractures by the Starched Apparatus.*—Benjamin Hunt has published, in the *Association Medical Journal*, reports of thirty cases of fracture, taken indiscriminately from amongst many others treated in like manner at the Queen's Hospital, Birmingham. We present a tabular view of these cases, with the remarks of the author:—

Case.	Name.	Age.	Fracture.	Date of accident.	Treatment commenced from time of accident.	Length of treatment.	Confinement to bed under treatment.	Result, etc.
1	Greenway	42	External and internal malleoli	Feb. 28, 1853	Mar. 4, 1853	3 weeks	2 days	Cured.
2	Tustin	53	Compound comminuted of tibia and fibula	Ap'l 18, 1854	Immediately	6 weeks and 3 d'ys	3 days	Cured.
3	Ady	54	Oblique of the femur	Jan. 10, 1854	7 hours	8 weeks	3 days	Cured.
4	Abel Cann	11	Transverse femur	Ap'l 11, 1854	Immediately	6 weeks	4 days	Cured.
5	Tudor	35	Pott's fracture	Ap'l 13, 1854	Do.	3 weeks	2 days	Cured.
6	McCarthy	19	Femur at lower third	Aug. 24, 1853	Do.	6 weeks	3 days	Cured.
7	Coyle	56	Femur near neck	Nov. 2, 1853	Do.	6 weeks	1 month	Cured. Shortened half an inch.
8	Wilkinson	26	Compound of femur	Oct. 8, 1853	Do.	2 months	..	Amputation. Recovery.
9	E. M.	77	Femur	Oct. 3, 1853	Do.	6 weeks	1 week	Cured.
10	M. A. Girling	7	Do.	Feb. 21, 1854	Do.	3 weeks and 5 d'ys	..	Cured.
11	Parsonage	3	Do.	Jan. 20, 1854	Do.	1 month	..	Cured.
12	Tyerbuck	6½	Do.	Aug. 6, 1853	Do.	7 weeks	..	Cured.
13	E. Wilson	6	Do.	Ap'l 27, 1854	Do.	3 weeks and 2 d'ys	..	Cured.
14	S. A. Field	5	Do.	May 5, 1854	Do.	3 weeks and 5 d'ys	..	Cured.
15	G. W.	44	Tibia and fibula	Dec. 27, 1853	10 hours	6 weeks	2 days	Cured.
16	H. Robins	34	Do.	Dec. 25, 1853	Immediately	3 weeks	2 days	Cured.
17	Bell	59	Do.	Ap'l 17, 1853	Do.	6 weeks	1 week	Cured.
18	G. Clarke	14	Do.	Aug. 13, 1854	Do.	1 month	1 day	Cured.
19	T. Dale	17	Do.	Sept. 30, 1853	Do.	3 weeks	1 day	Cured.
20	Mrs. S.	50	Do.	Mar. 14, 1854	Do.	6 weeks	2 days	Cured.
21	T. W.	41	Patella	Mar. 30, 1854	Do.	8 weeks	2 days	Cured. Union ligamentous.
22	J. W.	31	Fibula	Oct. 10, 1853	24 hours	3 weeks	2 days	Cured.
23	Sherriff	30	External malleolus	Jan. 9, 1854	Immediately	3 weeks	1 day	Cured.
24	E. Pattison	..	Inner malleolus	Dec. 29, 1853	Do.	3 weeks	2 days	Cured.
25	G. Hunt	35	Pott's fracture	....	Do.	3 weeks	2 days	Cured.
26	B. P.	51	External malleolus	May 1, 1854	Do.	2 weeks	2 days	Cured.
27	N. P.	56	Fibula	Aug. 4, 1853	Do.	3 weeks	2 days	Cured.
28	Allsopp	45	Compound radius and ulna	Jan. 25, 1853	Do.	1 month	None	Cured.
29	T. D.	45	Olecranon	May 17, 1854	Do.	3 weeks	None	Cured.
30	H. R.	25	Compound of tibia and fibula	Jan. 7, 1853	2 months	3 months	2 days	Cured. Nineteen pieces of bone came away.

Remarks.—In the above table, it will be seen that the ages vary from early childhood to extreme old age; from which it may be inferred that the method is adapted for any age; indeed, I have applied the apparatus, in treating a broken thigh, to a child aged sixteen months, and for the same injury to a woman above eighty years.

Under the head of "Fracture" in the table, it will be seen that the femur was the seat of injury in eleven cases; the tibia and fibula together, in eight; the fibula only, in four; the malleoli, either singly or together, in four; the patella, in one; the olecranon, in one; and the radius and ulna, in one. The bones of the lower extremities sustained the injury in every case but two, which may be accounted for from my not taking notes of cases which did not require admission into the hospital; and fractures occurring to the bones of the upper extremity generally do not; yet I have employed the apparatus in treating fracture of the arm and forearm as often as of the leg and thigh, and can as strongly recommend it in the one as the other.

It will be observed that, in the majority of cases, the treatment was commenced immediately after the receipt of injury, which may be called the time of election; neither inflammation nor swelling have supervened, and rarely, if ever, take place after the apparatus has been applied. When, however, several hours or even days have elapsed since the accident, and the limb, in the absence of treatment, shall have become swollen and inflamed, the application of the apparatus is usually followed by the subsidence of both these conditions.

The length of treatment in the above cases does not indicate the period of perfect union in every instance; the apparatus being worn beyond that time, for the more complete consolidation of the fragments. Judging, however, from these and other cases similarly treated, union of the broken bone takes place in the following order; namely, the femur, in six weeks; the tibia and fibula, in four; the fibula or tibia only, in two to three; the malleoli, in about the same time; the humerus, in four; and the bones of the forearm, either singly or together, in about three. These remarks refer to solution of continuity of the bone in the adult healthy subject; in childhood, the fragments unite much sooner; while old age, pregnancy, mercurialism, and cachectic states of the system, impede if not altogether suspend union.

Confinement to bed is perhaps the most irksome condition required of the patient under treatment for fracture of a bone of the lower extremity, not to mention the impairment of health it induces. Reference to the above table proves that this may be limited to two or three days, excepting while the fracture is complicated with injury to other parts of the body; and even then the patient may, in most cases, be placed upon a couch during the day.

The results are almost uniformly successful, the bones having united without shortening, and without deformity, in all the cases but three. Of these, one was a very severe compound fracture of the thigh, occurring to a man of weak constitution, which terminated in amputation of the limb; another was fracture of the femur close to the trochanter, and accompanied with severe contusions of the whole side of the body, in which case a cure was effected with half an inch of shortening; in the third and last, the injury, a compound fracture of the leg, had existed ten weeks before the apparatus was applied, and by this time necrosis of the bone had taken place, and the limb was greatly deformed; the modern method was only adopted, therefore, to save the limb, and in this it succeeded.

In concluding these remarks, I may observe that every case of fracture which required mechanical aid during the time I was Resident Surgeon at the Queen's Hospital, a period of one year and nine months, was treated by the modern method here recommended, and with equally good results. I must not, therefore omit to express my acknowledgments to the surgeons of that institution, Mr. Sands Cox, Mr. G. B. Knowles, and Mr. Langston Parker, for having permitted me to make such an extended trial of this plan.

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29. *Injury of the Perinæum; Rupture of the Urethra with extravasation of Urine.* Mr. J. S. Fletcher records (*Association Medical Journal*, Sept. 21, 1855) a highly interesting case of this accident, which presents some very unusual features. We transfer it to our pages, with the instructive practical remarks of the author.

"On the 27th December, 1852, I was called to Mr. Smith, aged 29 years, of nervous and bilious temperament. On returning from a committee meeting a short time previously, he had gone into his own yard to micturate, when passing over a trap-door, having one foot on the door, and the other on the flag on which it rested, it gave way, and let him down, falling with his perinæum on the edge of the hard flag. I saw him in fifteen minutes after the accident. He had then passed a large quantity of blood and urine, and was still bleeding very freely from the urethra; he was faint on standing, and had some pain in the perinæum, but no swelling, and but little tenderness, without any desire to pass urine. I made an attempt very gently to pass the catheter, but could not succeed, as it was obstructed near the prostate. I withdrew it, and ordered tepid fomentations, with an opiate; and saw him again in about two hours. The bladder was now much distended, causing considerable pain, and strong desire to pass urine. He had no swelling in the perinæum. I again tried to pass the catheter, and succeeded, by using a large instrument with the utmost gentleness, keeping it in the median line, and against the upper wall of the urethra. I could distinctly feel, however, that it passed through a long track of apparently torn passage. The bleeding had continued very free. I drew away twelve ounces of normal urine, unmixed with blood. The patient was ordered to allow the catheter to remain in, and to continue to use fomentations and opiates.

"December 28th. He had slept moderately. Urine had passed freely by the instrument, free from blood. There was the slightest possible swelling and tenderness in the perinæum; the scrotum was free from both. A small quantity of blood passed by the side of the catheter. The pulse was 78, with slight pyrexia. He was ordered to retain the instrument, and to take salines with an opiate.

"December 29th. He had a somewhat restless night. Urine passed in normal quantity by the catheter, free from blood. There was some pain at the seat of injury, and tenderness on pressure over the hypogastric region; but not the least swelling in perinæum or scrotum to indicate extravasation. The pulse was 98, and feeble; the bowels had not been moved; the surface was warm and moist; the tongue rather dry. He was ordered to continue the saline mixture, and to take a pill, consisting of one grain of calomel and a third of a grain of opium, every four hours; to use hot fomentations to the abdomen, and to have an enema.

"8 P. M. He had been restless through the day; and, when in the act of turning on his side, he displaced the catheter, after which the bleeding returned rather freely; and he had now a desire to pass urine, but could not do so. I again passed the catheter, but not without considerable difficulty; and only succeeded by observing carefully the same course as before, as there was evidently, close to the prostate, a considerable laceration of the urethra and parts around. On this occasion I could not get the instrument beyond the prostate without passing my finger into the rectum, to direct it, when I found this gland normal in every respect. I drew away about six ounces of clear healthy urine. During the time of passing the instrument blood passed in a stream almost amounting to a jet, and of a bright arterial hue, clearly indicating the wound of some large artery. There was no swelling in the perinæum. The bowels had been moved by an enema.

"December 30th. He had a sleepless and restless night. Urine had continued to pass freely by the instrument. His countenance looked anxious; the pulse was small, feeble, and 120. He had slight wandering delirium; the tongue was rather dry, with brownish fur; he had occasional hiccup. He had a slight rigor this morning. The perinæum, scrotum, and neighbouring parts were entirely free from swelling; but the abdomen was slightly swollen and tympanitic. In each iliac region there was a slight suspicious puffiness, dull on percussion, and separated by a slight central depression. The bowels had been freely relieved. He was ordered to take half a grain of solid opium every two hours, and to continue the fomentations.

4 P. M. I saw him in consultation with the late Mr. W. J. Wilson, the symptoms being much the same, except that the swellings in the iliac regions were larger. There was not the slightest swelling in the perinæum, or in the neighbourhood of the prostate as felt through the rectum. We agreed to meet at 7 P. M., and open the perinæum, in the hope that we might be able thus to promote the escape of the extravasated fluid.

"8 P. M. He had been much better the last few hours, having slept. Urine had passed very freely by the catheter, unmixed with blood. The swelling in the iliac regions was decidedly less; the pain and tenderness were both much relieved. He had less hiccup; the pulse was 108, and more full; the tongue moist; and he had less thirst. In consultation, seeing the great improvement within the last few hours, we thought it best not to interfere with the perinæum, as it was questionable, seeing the freedom with which urine passed by the catheter, whether or not we should relieve any extravasation there might be, as it was clearly behind the deep fascia of the perinæum. The patient was directed to continue the pills and fomentations, and to take beef tea.

"December 31st, 8 A. M. He continued better for some hours after we saw him last evening; he then again became restless, and had a very severe attack of delirium, in which he withdrew the catheter, got out of bed, and struggled hard with those around him. He had now constant wandering delirium, and complained of abdominal pain, and great tenderness on pressure. The swelling in the iliac regions was worse. The pulse was 120 or more, and very feeble; he had frequent hiccup. There was no swelling in the perinæum or the scrotum. I passed the catheter again without difficulty, and drew away six ounces of normal urine. ℞.—Liquoris opii sedativi ♏xl.; essent. camphoræ; Spiritus æther. nitrosi, āā ʒss.; Aquæ q. s. ad ℥i. M. Fiat haustus statim sumendus. He was ordered to continue the pills, and to allow the catheter to remain in. His delirium was relieved by the opiate, but in every other respect he grew worse as the day advanced.

"January 1st, 1853. He was in every respect worse. The swelling, pain, and tenderness over the whole of the abdomen had greatly increased; and the tumefaction had even extended around each side as far as the loins, having that peculiar doughy feel which is present in inflammation of the cellular tissue. The urine had continued to pass freely by the instrument, and, so far as could be ascertained, in normal quantity; this having been the case from the first. Mr. Wilson proposed an incision through the integument and fascia, to expose the external oblique tendon. This was made, without any of the extravasated fluid escaping. From this time the patient rapidly sank, and died on the following day, January 2d, no swelling having appeared in the perinæum up to death.

"*Examination of the body* thirty-six hours after death.—Putrefaction was rapidly going on in and about the pelvis. There were vesications and great swelling of the scrotum and neighbouring parts; but this was altogether the result of putrefaction since death, as not the slightest trace existed a short time previously. On cutting through the abdominal walls, we found, immediately behind the recti and other abdominal muscles, a large quantity of thin-looking pus, mixed with some blood; this extended upwards into the sheath of the rectus muscle on each side, and was contained between the posterior surfaces of the abdominal muscles in front, and the transversalis fascia and peritoneum behind, on each side. It had, in extending backwards, separated the fascia and peritoneum from their attachment to the inner surfaces of the posterior portions of the transversalis muscle; hence the doughy swelling, extending as far as the loins, noticed on the day preceding his death. Below, the fluid could be traced as coming from behind the pubis, having the central portion of the transversalis fascia internal to it, and the posterior surface of the symphysis pubis, covered only by periosteum, in front of it. On injecting the bladder, by means of a catheter along the urethra, fluid was seen to escape slowly immediately behind the pubis, from the neighbourhood of the membranous portion of the urethra. There were traces of very extensive peritonitis, with flakes of lymph one-fourth of an inch thick. On cutting into the perinæum we found that around the urethral bulb there was much effused blood; and from the bulb to the prostate gland, which was itself normal, the urethra was torn, there being no distinct canal, but a sort of sac, bounded by softened cellular tissue, infiltrated with blood.

"*Remarks.*—The preceding case presents some features which are not of frequent occurrence. It is a striking example of the results to be looked for from an injury to that part of the urethra behind the anterior portion of the deep perineal fascia, and is instructive as to the symptoms following such an injury, as well as to what would, in another similar case, be the most appropriate treatment. It will have been observed, from the account given of the *post mortem* appearances, that the extravasated urine did not take its most usual course after injury to the urethra with the escape of urine; this usual course being, that the urine escapes under the superficial perineal fascia, and is by this fascia directed forwards under the superficial fascia and integument covering the scrotum; whence, continuing its course, it finds its way under the superficial fascia of the abdominal walls, where it is found outside the external oblique muscles and their tendons, between them and the superficial abdominal fascia. This is the direction taken by urine escaping from all injuries to the urethral canal anterior to the front layer of the deep perineal fascia, and also from laceration behind that fascia, if it as well as the urethra should be injured. In all these cases, the fact of urine escaping is quickly made manifest by the swelling, first in the perinæum, then in the scrotum, and afterwards on the lower part of the abdominal walls; and it is almost too well known to need mention here, that the only hope of safety to the sufferer is by free incisions into the perinæum and other swollen and perhaps gangrenous parts.

"It is not, however, especially to this class of cases that I am desirous of calling attention, but to another and much rarer form, of which the case I have just detailed is an example, where the injury to the urethral canal is behind the front layer of the deep perineal fascia. The course taken by the extravasated urine is altogether different, and does not cause any swelling in the perinæum to call our attention to the fact that urine is escaping from its proper channel, and causing that destruction which we know to be the result wherever it escapes. This variety, although the least frequent, is by far the most dangerous in its results, as, in the first class of cases, recovery may be hoped for, and will frequently occur, without even the aid of the surgeon's knife; but, in these cases, such a result will never take place unless through the most timely and energetic treatment.

"To understand fully the two courses which extravasated urine may take, according to the part of the urethra injured, it is absolutely necessary that we should have a clear knowledge of the deep perineal fascia; and as, in some respects, I believe this fascia to be incorrectly, or at least not fully described, in most anatomical works, I may, perhaps, be excused for briefly giving what I believe the more correct description, so far, at least, as my own dissections show.

"The deep perineal fascia, or triangular ligament, as it is sometimes called, is described generally as a strong triangular portion of fascia, consisting of two layers—an anterior and a posterior—extending across beneath the pubic arch. 'The two sides are firmly attached to the rami of the pubes and a small portion of the ischia,' becoming continuous and mixed up with the periosteum on these bones. This description is strictly accurate in regard only to the anterior layer, to the lower part of which is joined the superficial fascia of the perinæum, after it has passed under the transversalis perinei muscle; but the *posterior layer* of this fascia I believe to be only a part of the pelvic fascia continuous with the transversalis fascia from above, and the obturator fascia from each side, which are only different parts of one continuous membrane. It extends across the back of the upper part of the pubic arch, and is attached by cellular tissue on each side to the margin of the pubis and a small part of the ischia; but it is not lost in the periosteum covering these bones. At its lower part, like the anterior layer, or true triangular ligament, it gives passage to the urethra, and sends backwards upon it and around the prostate a continuous fascial investment; and, below the urethral opening, it is continuous downwards and slightly forwards, to join with the lower margin of the anterior layer of the deep perineal fascia, where the two terminate in a tolerably distinct margin, from which, however, there is continued a less strong process of fascia on to the termination of the levator ani muscle, which, with the anterior layer or true triangular ligament, completes the division of the perinæum into a superficial and deep compartment, between which this fascia extends as a very strong septum above, and a more delicate one below. It was behind this anterior layer of the deep perineal fascia, and the fascia continued from it below on to the levator ani—that is, in the back part of the membranous or commencement of prostatic portions of the urethra—that the urethral canal was ruptured in this case; and it will be seen *that the urine would be prevented from coming forward by the anterior layer of the deep fascia, in consequence of which we were without swelling in the perinæum*, previously considered as a constant and immediate symptom of extravasated urine from rupture of the urethra. Prevented from coming forward, the urine pushed back what is called the posterior layer of the deep perineal fascia (but what in reality I believe to be a part of the pelvic fascia), separated it from the back of the symphysis pubis, and then, getting behind the abdominal walls (where, it will be remembered, swelling was first present in each iliac region on the third day after the injury), pushed inwards the transversalis fascia and peritoneum, and at last got into the sheath of the rectus muscle. It might also find its way into the areolar tissue around the rectum and at the base of the bladder.

"The instructive features in this case I conceive to be the fact that we *may have extravasation of urine from a rupture of the urethra, without any swelling in the perinæum*—a fact which I have nowhere seen stated before; that this is far more dangerous in its consequences than the ordinary kind; and that the absence of swelling depends upon the unusual course taken by the extravasated fluid. It will be remembered that the daily reports of this case show an entire absence of swelling from the perinæum up to death; and, in the face of the fact that we had a constant discharge of urine in good quantity through the catheter, I scarcely feared, until the end of the second day, any extravasation of fluid of any kind, either blood or urine; but on that day general symptoms pointed to some serious mischief; and the abdominal swelling on the third day was still more serious; its cause was shown by the *post mortem*.

"As to the treatment of similar cases, I think the result of this case most instructive; and I should, in any future case where, in injury to the urethra, I had reason to fear escape of urine, even though there be no swelling in the perinæum, provided there be general symptoms of extravasation, feel at once called upon to make a free and deep opening into the perinæum. In such a case, the incision must not be merely superficial, but must go through the anterior layer of the triangular ligament; and, in order to avoid wounding (should it not be already injured), the artery of the bulb, the incision must be made in the exact mesial line. It may be a question also whether or not, the urine having found its way behind the abdominal parietes, it would not be prudent to make an opening through these, cutting through the integument, superficial fascia, and three muscles. Such a course would, I think, be quite proper; and had it, as well as the deep incision I have spoken of, been made early in this case, it is within the range of possibilities that there might have been a more fortunate termination; but, in the face of an entire absence of swelling in the perinæum, and of the improbability of there being much urine extravasated, we did not consider it justifiable. I am now of opinion that I should take a different view of any similar case, and should at once resort to the free and deep opening."

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30. *Chloroform in Surgical Operations, the cases in which it should not be applied.*—Mr. Coulson, in a discussion at the Medical Society of London, October 13th last, said, that all surgeons in large practice must have employed this agent a great number of times, and experience has enabled them to determine several points about which there can be, he thought, no question any longer. In the first place, it may be considered settled that chloroform is a better anæsthetic agent than ether. It may also be regarded as a settled point, that the administration of chloroform is not attended with a sufficient amount of danger to justify, as some think, its rejection altogether. On the other hand, he would not go so far as to say that its use, even with every precaution which science can suggest, is totally devoid of danger. Persons enjoying good health have poisoned themselves with chloroform. Every now and then its administration proves fatal, and no reason can be assigned. But this can be said—for many thousand cases justify the conclusion—that the danger is infinitely small to the advantages gained. The danger, however, exists; hence, he should like to see a third point accepted—viz: that chloroform should not be administered on light occasions, or for trifling ailments, and, above all, that it should not be used except under the superintendence of a competent person. The physiological effects of the agent point out at once the vast range of cases in which it may be employed with benefit. To these he should not allude; but for the present notice a few cases in which, according to his experience, chloroform should not be used. Surgeons are not entirely agreed on these, and it seems more useful to discuss a few doubtful points than to dilate on measures about which no difference of opinion exists. The annihilation of pain is the grand victory of chloroform; but, it may be asked, is it always desirable to suspend sensation during surgical operations? He (Mr. Coulson) should say not always. In some rare cases, the feelings of the patient are a useful guide to the surgeon; hence,

in these cases, sensation should not be abolished. This is the principle which should be adopted. As an example of this class of exceptions, lithotrity may be mentioned. It must be confessed that it would be an advantage if chloroform could be employed, as it is a great object to diminish the sensibility of the bladder and the spasm about the neck of that organ which so frequently exist, and not only render the operation in itself difficult, but add to the danger of its results. Yet when the nature of this delicate operation is considered, carried on, as it were, in the dark, and when it is further borne in mind that the operator should be fully aware of every step he is taking; in an organ completely removed from his sight, it cannot be expedient to render the patient insensible, and thus lose the aid which his feelings afford. On many points the patients' sensations are the chief guide which direct the surgeon when he is going wrong, and without them fatal injury might be often inflicted without his being aware of the mischief which he had done. If any operator had arrived at such a degree of dexterity and skill, that it was impossible for him to commit the slightest error, such a man might, perhaps, use chloroform, but until such a man appears, it should not be used. Much mischief might be inflicted unless the feelings of the patient were to control the proceedings of the operator. A case in point occurred in a public hospital before the introduction of crushing, at a time when the perforator alone was employed. Notwithstanding the cries of the patient, the surgeon went on using the perforator in a most industrious manner. The bystanders feared something wrong, but the surgeon appealed to the sound of a metallic body striking against stone, as a proof that the calculus was actually seized, and undergoing the process of perforation. In a few seconds the cries of the patient became more violent; blood issued abundantly from the urethra. The bystanders now interfered, and pointed out to the surgeon, that the noise which he had heard was produced by the external end of the perforator striking against the seals of his watch-chain. The operation was suspended, and the patient's life saved; but had he been insensible, there is no saying what mischief might not have been inflicted, for the calculus was not between the blades of the instrument. The same principle may, perhaps, be applied to certain obstetric operations, which, like lithotrity, are performed in a deep-seated cavity, and where the feelings of the patient may prevent the infliction of fatal mischief. It often produces vomiting; hence, it should not be used in cases where the effects of vomiting may produce an injurious influence on the health of the patient, or on the results of the operation. As examples, cataract and cleft palate may be mentioned. After division of the cornea for extraction, severe vomiting might cause repulsion of the contents of the eyeball. After sutures of the cleft palate, the severe vomiting may either cause the sutures to give way, or produce such disturbance of the parts as leads to sloughing. Besides this, the active efforts of the patient are required to aid the surgeon in many operations about the fauces; hence another principle of restriction. Indeed, the absence of such active efforts may be a cause of positive danger in certain operations, during which blood may find its way into the air-passages. Some surgeons make light of such accidents, but experience shows that they have often been the cause of much embarrassment, and, at times, of considerable danger. In addition to local circumstances, there may be certain general conditions of the patient which would render the use of chloroform doubtful. Thus it has been a question how far the agent can be safely employed in cases where a severe shock has been already produced by violent and extensive gunshot injuries. Some high authorities condemn the use of chloroform in such cases; while, on the other hand, our younger surgeons in the Crimea apply it without apprehension. It is to be hoped that the opportunities afforded during the present war will enable military surgeons to decide this interesting question.—*Lancet*, Oct. 20, 1855.

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31. *Excision of the Elbow-Joint; Recovery; the motions of the Forearm and Hand, with the functions of the limb, preserved.* By Richard G. H. Butcher, Surgeon to Mercer's Hospital.—When a case of incurable disease of the elbow-joint presents itself to the surgeon, the first question for consideration is one

upon which I have laid much stress when treating of excision of the knee—namely, is the case one which must be submitted to amputation, or is it one to which resection is applicable? Now if this distinction be not made, if a painstaking investigation be not instituted, an error in diagnosis may do one of two things—either the wretched sufferer may be doomed to mutilation for life, or resection (a most valuable operation) may be brought into discredit by its performance where not at all suited, and where it was never intended by its warmest supporters. Again, it should ever be remembered that a patient may not have the power to bear amputation, after failure by an ill-advised resection, when he might have made a good recovery after amputation, if performed at first.

An all-important point to establish is, to what extent are the bones engaged? Through fistulous openings the surgeon, almost invariably, will have the power of determining with the probe and by manipulation, according to his tact, the amount of disease; the entire carious part must be cut away—therefore, when extending much beyond the articular surfaces, resection should not be attempted, as it is plain, removal of a few inches of each bone could not be followed by even an approximation to cure in any way satisfactory. Here, then, amputation takes its proper place. A wide distinction, however, must be drawn between the hardened, roughened surface of the shafts of the bones in the immediate vicinity of carious joints, and the carious surfaces themselves which in most instances are confined merely to the articulating extremities. I wish to lay stress upon this vital distinction, because men have conveyed by their writings and delineations (though never intending to do so) the consummation of this blunder. In some instances, no doubt, some of these roughened spiculæ must be pared off, to permit the parts to come evenly in contact; but this is a very different thing from cutting away three or four inches of the humerus. There is this distinction between the two conditions: the one is the result of excessive action, as it were limiting disease, the other is the disease established and progressive. Now the thickened integuments, apparently disorganized, pierced with jagged apertures, through which escape the unhealthy secretions from the vicinity of the diseased bones within, need form no obstacle to resection; though livid, dark, and unhealthy looking, it is marvellous in how short a time they recover when the sources of irritation have been taken away. The gelatinous infiltrated tissues become softened down by suppuration, and are cast off and replaced by a more healthy and vital action, that of granulation, the precursor of cicatrization and cure. The age of the patient, in a secondary way, may be mentioned in considering the question of resection of the elbow; however, I think the surgeon will be best able to form an opinion according to the individual case. I have seen some in advanced age repair injuries, and go through operations with as persistent a recovery as could be desired, when liberally supplied with stimulants. No doubt the plastic efforts of nature will be more marked and her restorative energy more decided during the elasticity and vigour of youth; yet if gently and carefully assisted by the surgeon, she will not abandon the young or the old; however, in young subjects sometimes the scrofulous taint, poisoning, as it were, every healthy function, restlessly active, may create an insuperable obstacle to resection.

The annexed case offers practically an illustration of that which I conceive to be the best mode of performing the operation, and of conducting it to a favourable issue.

J. F., aged 56, admitted to Mercer's Hospital, July 8, 1854. *History.*—He had been a soldier, and served for many years, exposed to several vicissitudes and extremes of climate; on four occasions he suffered from syphilis, prolonged with its secondary and tertiary forms, but each yielded to treatment. The patient associated the commencement of his present sufferings with a severe wrench of the right elbow-joint, which originated in a scuffle with a tipsy companion eight years before, and during this lengthened period pain was never absent, though at times but trifling, yet at others almost unbearable. The joint was not only injured and violently disruptured, but the soft parts all around were extensively ecchymosed from contusion, the man having fallen upon him. Various modes of treatment, those usually adopted in similar cases, were had recourse to, but with little benefit and only temporary ease; latterly his annoyances became so much more permanent, that his health was entirely broken up, and the constitutional derangement, as a sequel to sleepless nights, loss of appetite, and perpetual restlessness, made him seek for advice in hospital. When received under my charge on the above date his case was painfully typical of the prostrating effects, the corroding results of a diseased joint, paralyzing, as it were, the powers of vitality, and vitiating the very springs of life; the patient was sadly reduced; from being an athletic man, he was thin, emaciated, and haggard; loss of appetite, occasional diarrhœa, night-sweats, scanty renal secretions, evidenced the disturbance of the digestive functions; listlessness, weakness, and an inability to exertion, predominated over the muscular system; while pain, ever varying in acuteness and duration, hallucinations in imperfect sleep, partial stupefaction, sometimes from intensity of suffering, ending in total apathy as to recovery, evidenced how deeply the nervous system sympathized in the local malady. The changes wrought in the limb were strikingly characteristic of long-continued disease; the shoulder and upper third of the arm were wasted, the forearm and hand attenuated, the fingers being extended, flattened, and the integuments covering them being thin, shining, glazed, with the unguinal phalanges slightly puffed, and nails bent.

As before mentioned, the forearm was fixed at nearly a straight line with the arm; all around the elbow-joint was inordinately swollen, the circular measurement corresponding to the flexure being 15½ inches, while the arm in its upper third only measured 6½ inches, and the forearm, at the junction of the lower and middle third, only 7 inches. The integument covering the joint and adjacent parts was in many places of a dark livid colour, while immediately on the confines of the swelling it assumed a mottled appearance. Numerous apertures existed around the articulation, in all, eight in number; five were situated on the inner side of the limb, three behind the internal edge of the olecranon, and one on the outside, somewhat over the head of the radius.

The great bulk of the limb corresponding to the diseased joint was elastic, harder in some places than in others, and made up of depositions of fibrin, consequent upon the oft-repeated and violent attacks of inflammation, perpetuated for many years. Several of the sinuses presented at their apertures everted, fleshy papillæ, bleeding on the slightest touch; through them the diseased condition of the bones entering into the articulation was clearly revealed; a probe gently passed along the trajet of either, soon came in contact with the denuded carious bone. From the great thickening of the parts around the joint, and the spastic action of the muscles imposed by a rigid position, the motions of flexion and extension were prohibited; slight pronation could be effected, and the grating of the head of the radius on its pivot was very audible at the time. By these various sources, and the method of examination, then, a very accurate conclusion was arrived at as to the totally disorganized condition of the joint—the decay and death of the extremities of the bones formerly constituting its beauty and perfection. From a very careful investigation and minute inquiry into all the bearings of the case, I was forcibly impressed with the conviction that the shafts of the bones were not involved; by the most pains-taking manipulation with the probe, I could only discover the condyles of the humerus, and the olecranon process, together with the head of the radius, diseased; the thickening and induration above and below the joint, I presumed, had its origin and seat in the soft parts, as the product of repeated inflammatory action. Upon the foregoing inferences I rejected amputation, and decided on excising the diseased extremities of the bones forming the articulation, and proceeded after the following manner: The patient being placed upon a table in the horizontal position, and lying on his back, chloroform was administered, and on its effects being produced the limb was drawn from the side and elevated; one assistant commanded the brachial artery, and steadied the arm, while another supported the forearm. Standing on the right side of the patient, I made an incision commencing about an inch above the internal condyle, and a little behind the ridge leading to it, and extending downwards in a direct line to a little below the junction of the coronoid process with the body of the ulna. The wound in its entire length measured about two inches and a half; an incision of like extent was next made over the external condyle, the ridge leading to it, and the head of the radius. The internal of these incisions was so planned that it permitted the ulnar nerve to be quickly freed from its sheath behind the condyle, and drawn without much disturbance, together with the soft parts, somewhat in front of that prominence; thus this important part was protected during the formation of the third incision, which connected the lateral longitudinal ones, and lay in a transverse direction over the extremity of the olecranon. The attachment of the triceps being cut through, the upper flap was raised and held upwards, while the parts covering the olecranon, and constituting the lower flap, were rapidly dissected from the bones and restrained downwards. The lateral ligaments were next cut through, and the forearm violently flexed; and the ends of the disarticulated bones thrust backwards through the wound. Scarcely had this measure been accomplished, when the accuracy of the diagnosis was fully confirmed; the ends of the bones seemed alone to participate in the mischief, but to their condition I shall again allude. The excision of the ends of the bones was readily effected in the following way: The diseased articulating surface and condyles of the humerus were made to project more freely backwards, and clear of everything else, by bending the forearm to nearly a right angle and drawing it forwards, the humerus being thrust in the contrary direction. I next placed the fine blade of my own saw in front of the bone, and cut off the condyles, with the expansion of the shaft immediately above them, from before backwards; the line of section verged upon the superior margin of the fossa for the olecranon. The extent of the part removed measured from above downwards about an inch and a quarter. I next freed the attachment of the brachius anticus from the coronoid process of the ulna, and having passed the blade of the saw in front of it and the neck of the radius, I cut them across by antero-posterior section, thus removing the diseased olecranon and head of the radius. The divided ends of the bones were carefully examined, and pronounced to be healthy; I clipped away with the scissors a good deal of disorganized tissues, and secured a few vessels which yielded blood, three on the outside, and the ulnar recurrent within; all were considerably enlarged from the previous persistence of disease in the part. The limb was next placed upon a splint at a right angle, and steadied above and below by a few turns of a bandage, the wound and parts adjacent being left exposed for the application of a few folds of linen steeped in spirit lotion. In this state the patient was removed to bed.

At 4 P. M., six hours after the operation, I proceeded to dress the limb. The man was free from pain, and there was no disturbance of the system; the bandages being taken off, and the limb remaining supported on the splint resting on its internal side, the glazed flaps were gently drawn together and made to meet in the transverse line, and retained so by three points of the interrupted suture; the longitudinal incisions were likewise approximated, and held so by a few stitches at their remote ends, the centre part being left open to permit any weeping or secretions to have a free escape; a few straps of adhesive plaster afforded additional support to the flaps. The wounds being so arranged, the arm was steadily lifted from the splint, retaining its somewhat more than rectangular position, and evenly rolled from the fingers to the shoulder; it was then placed in an evenly padded wooden case, accurately made for the purpose, with hinged sides, and the correct angle preserved. The forearm resting on its inner edge, or midway between pronation and supination, was steadied so by pads adapted to its inequalities; the sides, being elevated and fastened by a few straps of broad tape and buckles, steadied the entire immovably. By this mode of dressing, and this apparatus, the patient felt relieved from all apprehensions of displacing the bones; it lay evenly supported upon pillows, and somewhat raised at its lowest end. Wine, four ounces.

8 P. M.—No pain; no oozing of blood; no tension of the parts; ordered a full opiate, and to be repeated in the night if restlessness should come on.

15*th*.—The patient slept nearly the entire night, and he had only to take the one draught. Pulse 92, soft and full; no headache; no pain in the wound; to have tea and toast, milk and eggs; spirits, four ounces; and beef tea with bread for dinner.

16*th*. Report most favourable. To continue stimulants and food.

17*th*. Slept all night after an anodyne; pulse 88, soft and full. Proceeded to dress the wound by letting down the sides of the box, and, slitting up the bandages from one end to the other, they were easily removed without lifting the arm from the support beneath; by this means all disturbance of the parts was prohibited; the flaps, at their junction in the transverse incision, were quite united, and the extremities of the lateral cuts were, in the same way, repaired; no additional swelling; no pouching of matter; a slight oozing of imperfect pus and serum has stained the dressings, and has had free room to escape, owing to the precautions already alluded to; lint smeared with simple unguent being laid over the wound, all bandages were now dispensed with; the pads were efficient in affording an equable support to every part of the limb; the sides of the box being closed up and fastened as before; stimulants and anodynes were freely administered.

19*th*. Dressed the limb as at last report; wound looks most favourably; a free discharge of healthy pus; no swelling or tension of the parts; to continue stimulants.

28*th*. Dressed the limb every alternate day since last report; and now the inordinate thickening of the integuments and tissues around the joint, and constituting the flaps, is considerably diminished; the purplish livid discoloration has likewise nearly disappeared; the discharge is free and healthy from the interior, while granulations have sprung up, and appeared in the longitudinal wounds about their centre, where they had been suffered to remain apart for the special purpose of opposing union. On the whole, the parts are in a most satisfactory state, which, coupled with the total absence of all constitutional disturbance, promises most favourably for the issue. All ligatures have been cast off.

August 28. There is very little discharge now, and the case is rapidly progressing to cure; whatever is secreted comes from the interior of the wound, and escapes without obstacle through an aperture in the most depending part beneath; the soft parts around are much contracted, or, in other words, their hypertrophied condition is, in a very marked degree, reduced, the structures being consolidated, and the patient possesses the full power of moving the fingers as freely as ever. He has been sitting up in bed for the last ten days, and his general health is much improved. I removed the heavy box, and substituted a light pasteboard trough made after a similar form, and permitted the patient to walk about. From this period he continued daily to improve, and at length the discharge ceased altogether; bony union did not take place, yet the junction by fibro-ligamentous tissue was gaining rapidly thickness and solidity; at the same time the movements of the fingers were quite perfect, and his grasp was as strong as before the operation; the forearm retained its motions of pronation and supination to the full extent; the only motion deficient was the full power of flexing the forearm when the limb was extended; I attribute this, in a great degree, to the emaciated state of the biceps muscle, which existed before the operation, for be it remembered that its attachment to the tubercle of the radius was not interfered with. Now to compensate for this loss of power I had recourse to the following expedient: A strong linen case was made to surround the false joint, and embrace the limb above and below it to an extent of from four to five inches; it was so formed as to sustain the forearm, at somewhat more than a right angle; it laced in front and was strengthened by pieces of whalebone placed exterior to the holes through which the cord passed; when this was adjusted the man could use a spade or shovel, and possessed great power with the limb.

The patient was now dismissed from hospital, and went to the country, and I lost sight of him for many months; on his return he called to see me; I found all the power and movements of the limb were quite perfect, with the exception of flexion of the forearm. I questioned him very closely as to the exercise which the limb had enjoyed, and was disappointed when I heard the linen case was seldom taken off, never by day, so that the muscles presiding over flexion of the limb were kept in restraint and inactivity, and consequently were enfeebled, lowered in tone, with a wasting and diminution of all bulk. So satisfied was I of the true cause being explicable on this ground, that I retained the man in hospital for four or five weeks, removing all restraint, and permitting him to use the limb in every necessity, and moreover to work in the garden with the spade and shovel. At the end of this period the changes were marked; a perseverance in the exercise of the muscles developed their tone, tension, and volume, so that the patient actually regained the power of flexing the forearm on the arm. No doubt, the effect was slow, but it was sure; and as time passes so improvement will be superadded. At the present moment the man has had a limb preserved, well qualified for his numerous occupations.

Now with regard to incising the soft parts, many modes have been devised and recommended; but it need be of little moment to the dexterous surgeon, in ordinary cases, whether the flaps be single, double, or quadruple; the convenient exposure of the bones from behind is all that is required if there is much to be taken away, as in the case by which I have illustrated the operation. I am of opinion that the H incision, the mode inculcated, executed according to the rules which I have laid down, is the one most desirable. By the internal incision the ulnar nerve can be drawn aside and taken away from injury. As to the cutting of the bones, I am of opinion that it can be most readily achieved by at once cutting through the insertion of the triceps and the lateral ligaments, and then disarticulating; all the remaining muscular fibres should be detached, and the osseous parts can be cut through with great facility from before backwards by aid of the saw which I have figured in this journal for February of the present year; the fine blade of the instrument is readily placed in front of the bones, the flaps do not interfere with its working, and the rapidity with which it cuts is most pleasing to the operator; but, above all, the section is perfectly smooth and even; this latter perfection is borne ample testimony to by the numerous specimens in my collection, and which I have excised from the living subject with it.

Not only does the early disarticulation facilitate the after-steps of the operation, but it is of incalculable advantage, as at once revealing the amount of disease, and as to how far these bones may need resection. The bones removed in the case which I have detailed afford so beautiful a specimen that I cannot forbear giving an engraving of them. It will at once be seen how completely limited to the joint the caries was, and how a cavity existed in the end of the humerus, which necessitated the section of the bone a little above the condyles. A small abscess will likewise be seen to exist in the olecranon process of the ulna. The head of the radius exhibits in its centre and on its outside a small remnant of its cartilage of incrustation, while the worm-eaten appearance of the bone around is very characteristic of the affection.

As to the after-treatment of the limb, all arteries should be tied, particularly the posterior ulnar recurrent; if not secured, this vessel will surely bleed after the patient becomes warm in bed, and give a great deal of trouble by requiring the flaps to be again separated to permit of its being ligatured. Roux gives one solitary instance where a patient under his care died of secondary hemorrhage. The limb should be steadied in the box with falling sides, such as I have described, and maintained as steady as possible for many days; by this gentle manipulation the part may be induced not to resent the violence offered to it by any destructive burst of inflammation. After the flaps have become united, and consolidation of the parts within has progressed to firmness, about the end of the fourth or fifth week, very small and passive motion may be commenced, so that, by carefully apportioning exercise to the repaired and condensed structures, the limb may be restored, efficient and useful for all the purposes of life. Sometimes the union between the bones may be slow in consolidation; it was so in the instance which I have recorded, yet after the lapse of some months it was sufficiently firm for all the necessities of manual labour. The surgeon, I say, then, need not be disheartened by the tediousness of recovery; in the end it will come. It was so likewise in one of Moreau's cases, who writes thus: "The flexion of the forearm upon the arm is strong, firm, and steady; it was a long time before the movement was regained; when he wanted to bend the arm, the forearm shook and fell in towards the inner side, but he has got the better of that of late, and now this motion is free and correct." Further on he mentions, in relation to this case: "I must not forget to state, that this man has now the use of his arm so completely that he uses it in thrashing in the barn, holding the plough, &c."

I shall append to these remarks on excision of the elbow-joint the impressive and simple words of Moreau: "If these things seem to be incredible, they may be easily brought to the test of experiment. I am firmly of opinion, that, in similar circumstances, the issue will be the same."—*Dub. Quart. Journ. of Med. Science*, Nov. 1855.

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32. *Description of a New Operation in Cases where the Joint has been firmly Anchylosed in the Straight Position after Injury.* By Richard G. H. Butcher, Surgeon to Mercer's Hospital.—There is a condition of the elbow free from disease, the result of injury, when it has become fixed by bony anchylosis in the straight position, that requires special notice. I at once cede the point that, by many, such an inconvenience might be borne with rather than running risks by submitting to a severe operation; but, on the other hand, there are some upon whom the effect would be to deprive them of the means of earning their bread, and, having no resources, would, of necessity, consign them to be inmates of a poor-house for the rest of their days. Here, I think, surgery legitimately offers her powers to relieve. In such a condition of parts I would not excise the joint, but would execute the following operation. I have frequently performed it on the dead body, and a dexterous hand may readily accomplish it in the living. The arm being placed in the same position as that for resection, an incision should be made, about an inch in length, behind the internal condyle, and the ulnar nerve freed from its bed, and drawn forwards with a blunt hook; a second incision should pass outwards to the most prominent part of the external condyle, at right angles with the first, dividing the integuments and ligamentous expansion covering the olecranon. The fine blade of the saw which I use for resection being detached, it should be passed from the extremity of the transverse incision, that is, from without inwards, in front of the condyles and the joint, its flat surface being applied to them; the blade, being sharp at the point, can be readily made to pass along this direction, and by drawing the integuments a little in front of the internal condyle it will appear through the perpendicular incision, or that made in the first instance; the serrated edge may then be turned backwards, the blade connected with its frame, a few movements will sever all resisting parts from before backward, corresponding to the line of the transverse incision through the soft parts; the limb should then be bent at less than a right angle, and any vessels requiring ligatures must be secured. The after-treatment should be exactly in accordance with the rules laid down when speaking of resection. An operation accomplished after this plan is not, I conceive, nearly so serious a measure as excision of the joint; the brachial artery need not be considered in danger, except through undue rashness, and the hopes of a more perfect motion may rationally be expected, when no muscular attachments are divided.—*Dub. Quart. Journ. of Med. Science*, November, 1855.

OPHTHALMOLOGY.

33. *Chloroform in Extraction of Cataract.*—Mr. Haynes Walton stated to the London Medical Society, October 13, 1855, that he had, some time since, used chloroform in the operation of extraction of cataract. In two cases the eye was lost from the vomiting or retching which supervened. He then left it off for some years, and now only employed it when the patient could not control himself, and was restless. There was an objection to chloroform in this operation independent of the retching or vomiting it might produce; this consisted in the fact, that under chloroform the lens did not start so freely after the division of

the cornea as when chloroform was not used, but was more like the lens of a dead body. He related also a case of a cleft palate, in which vomiting came on after the use of chloroform, in consequence of the patient having swallowed a large quantity of blood. The operation failed.

34. *Rupture of the Inner Circle of the Iris.*—Mr. W. White Cooper relates (*Association Medical Journal*, Oct. 9th, 1855) three interesting cases of this rare accident.

"*Case* 1. In October, 1854, a man was admitted into St. Mary's Hospital, having received a very severe blow upon the right eye; the anterior chamber was full of blood, and no trace of the iris was visible. He was put to bed, and cold applications were ordered to be constantly applied to the injured eye; a brisk aperient was administered, and he was placed on low regimen.

"I did not see him until the following day, by which time absorption of the effused blood had proceeded so vigorously, that the condition of the iris could be ascertained. It was then seen that this blood had issued from two fissures in the pupillary margin of the iris, which presented a jagged appearance. The pupil was widely dilated, perfectly motionless, and the sight was so far impaired that large objects only could be discerned.

"The eye was, however, free from inflammation, and the patient made no complaint of pain. Under these circumstances, as there happened to be a great demand for beds, the man was permitted to leave the hospital, under the promise of attending as an out-patient. This, however, he did not think proper to do; and it was only by accident that I subsequently obtained an opportunity of examining the eye. Its condition at the expiration of two months was as follows:—

"The pupil was still widely dilated, and the irregularity of the inner margin of the iris was very distinctly seen. Neither contraction nor dilatation of the iris could be excited; it remained perfectly motionless under every amount of light. The eye had speedily recovered from the accident, with the exception of the sight, which remained very dull, all objects appearing hazy and indistinct. The sight was improved by looking through a pin-hole aperture in a card. As there were no indications of inflammatory action, he was recommended to supply himself with a pierced diaphragm to limit the quantity of light entering the eye, and to avoid everything which could over-excite the organ.

"*Case* 2. An officer of dragoons, quartered in Dublin, early in October, 1854, was playing at racquets, when he received a violent blow from the ball on the left eye. For a time he was stunned, but on regaining his senses he found that sight had left the injured eye. He placed himself under the care of an eminent physician, and Mr. Wilde was also consulted, so that no skill was wanting in the early treatment of the case.

"This gentleman was seen by me on the 16th of the following November, about six weeks after the accident. The condition of the eye was as follows: The pupil was so enormously dilated that the iris was reduced to a mere narrow strip, and was perfectly immovable under the strongest light. The lower portion of the margin presented two fissures, the edges of which being drawn asunder, gave a saw-like appearance to that part. The sight was very imperfect, large objects only being discernible; it was not improved by a pierced diaphragm.

"Stimulating embrocations and instillation of tinctures of aconite and of opium were tried, but without the slightest benefit.

"I saw this gentleman from time to time, and six weeks after his first visit decided improvement in the sight displayed itself: by looking through a pin-hole aperture he was able to discern objects which had before been very indistinct. After the lapse of four months, an alteration became visible in the condition of the iris; a certain power of contraction had been regained, for there was a marked diminution in the size of the pupil, and an equally marked increase in the breadth of the iris. Still it could not be seen to act under the influence of light, there being no discernible alteration when the eye was alternately shaded and exposed.

"In July, when I last saw the patient, a still further improvement had taken place, and now a faint contraction and dilatation could be excited. The sight was materially amended, for not only could he discern distant objects by means of the pierced diaphragm, but he could read and write with tolerable facility. There was, however, this drawback, that under the most favourable circumstances the vision of the two eyes was not equal; and as my patient could not constantly wear the diaphragm, he unconsciously acquired the habit of closing the injured eye when looking at any object.

"*Case* 3. On the 14th of June, 1855, I was consulted respecting the case of a youth, aged 17 years, who had received the following injury eleven weeks previously: a round and heavy pebble was thrown by a lad at another boy who had incensed him, but the missile unfortunately lighted full on the right eye of my patient, who happened accidentally to come between the two at that unlucky moment. He fell from the force of the blow, and was at once rendered blind of that eye. He was placed under medical care, and active measures were resorted to; but the sight was only restored to a very imperfect extent. He was therefore brought to town.

"The nature of the case was unmistakable. The pupil presented the characteristic wide dilatation, and the lower margin had that serrated appearance which has already been described. In this case there were three fissures, so that the irregularities were very marked. The colour of the iris was unchanged, and the eye was perfectly free from inflammation. On being desired to close the sound eye, it was ascertained that he could see large objects, but even these indistinctly. On placing a pin-hole aperture before the eye, he could recognize features, and read tolerably large type.

"As the injury was extensive, I formed an unfavourable opinion as to the result of this case, and advised that instead of his being apprenticed to a printer (as was intended), some agricultural occupation, or other pursuit requiring little exertion of the sight, should be selected. The use of a pierced diaphragm was recommended."

Mr. Cooper states that so far as his experience has hitherto gone, injuries of the pupillary margin of the iris are little amenable to treatment. "This will, no doubt, in a great degree depend upon the depth to which the fissure extends, and the consequent amount of laceration of the fibres which contract the pupil. If these are completely divided, the pupil will be widely expanded, and no application will cause its contraction; if only partially divided, a certain amount of contraction may be excited. The question will be anxiously asked, Is the eye likely to recover? for although after a time the organ becomes accustomed to the unnatural glare of light, the sight is, under the most favourable circumstances, seriously interfered with. A very cautious prognosis should be given. Time, perhaps, may improve the state of things; but if the laceration be extensive, it must be very doubtful whether the powers of reparation will be sufficient to bring the eye into a useful condition. The edges of the fissures are widely separated, and cannot be approximated by any means with which I am acquainted. The fissure may be likened to a cleft palate; but we are without the means which modern skill has supplied, of removing that defect by operation.

"But do we possess any means of remedying the inconvenience arising from this permanent mydriasis? Unquestionably! by artificially imitating the contracted pupil, the eye may be rendered useful, unless damaged by inflammation. This is best done by means of a spectacle-frame, fitted for the affected eye with an opaque plate, either of thin steel, horn, or blackened tortoise-shell, and having in the centre, to correspond with the pupil, an aperture, either circular or as a transverse slit. The form and exact dimensions must be a matter of experiment. Various forms and sizes should be tried, and that selected which affords the best vision."

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35. *Do Eyes of different Foci puzzle each other?*—A young woman presented herself Nov. 23d, among Mr. Critchett's out-patients, at the Royal Ophthalmic Hospital, on whom the operation for cataract had been performed on the right eye, the left being at the time perfectly sound. The cataract had been caused

by an accident in childhood. Mr. Critchett remarked, "It has been laid down as a law, that in cases in which one eye is perfect, no attempt should be made to remove a cataract from the other, because by so doing you will get eyes of different foci, and your patient will be annoyed with double vision. Experience does not, however, confirm this dogma of *à priori* reasoning. In the woman before us I operated for cataract simply because the white opaque capsule was a deformity, and I subsequently operated for strabismus on the same eye with the same intent. The result you see. There is at present no visible imperfection in the patient's eyes. She has not much sight with the right, it is true; nor, indeed, could it be expected, seeing that light had been shut out for twenty-two years. The eyes do not, however, trouble each other, and there is no double vision. I am quite certain that, practically, eyes of different foci become in time accommodated to each other, and that instead of confusing, the less perfect eye assists the other. It may be that, under circumstances where double vision would be likely to occur, the patient learns to disregard one of the impressions. A patient who has been operated upon for cataract in one eye, the other being perfect, will have better sight than if he were simply monocular."—*Med. Times and Gaz.*, Dec. 1, 1855.

36. *Extirpation of the Globe of the Eye.*—This operation has mostly been restricted to malignant diseases of the eyeball, and to tumours within the orbit; but Mr. George Critchett, one of the Surgeons of the Royal London Ophthalmic Hospital, has recently performed it in—1st. Extensive staphyloma of the globe, with and without recent inflammatory disease. 2d. Cases where there was reason to suspect the presence of a foreign body within the globe. 3d. Cases of severe symblepharon, or adhesion of the globe to the eyelid, causing pain, irritation, and deformity, and for which no other operation is of any avail. 4th. Acute inflammation and pain in the globe, with loss of vision, occasioning great distress, and preventing the use of the other eye, and showing a constant tendency to severe relapses. 5th. Deep-seated disease of the globe, the result either of accident or of idiopathic inflammation, with disorganization of all the structures, in which the other eye exhibits symptoms of sympathetic affection, threatening gradual failure of sight.

In a recent interesting paper (*Lancet*, Nov. 17 and 24), he gives the following explanations and illustrations of each of these groups, to show his reasons for performing the operation:—

"In some of the more severe cases of staphyloma, where the entire globe is enlarged, the sclerotic thin, and the deep-seated vessels, both in the choroid and retina, are much dilated, it is found that the ordinary operation of opening the globe is liable to certain rather serious inconveniences. When the humours have escaped, the vessels, deprived of the support to which they have been accustomed, give way, and rather profuse and protracted hemorrhage often takes place, which first painfully distends the globe, and then escapes through the lids. This is usually followed by severe inflammation and suppuration of the globe, which continues many weeks, is attended with very severe pain, and often leaves a considerable enlargement, which is prone, from time to time, to take on inflammatory action. In such cases, I am of opinion that the removal of the globe is a far milder operation than opening it in the usual way for the operation for staphyloma. The only objection to the plan is, that no structure but conjunctiva remains upon which an artificial eye can be adapted; but the conjunctiva falls together, unites, and, still retaining its connection with the muscles, forms a movable curtain, upon which the artificial eye may rest, and by means of which some movement is attained. It can be very readily removed and replaced, and excites less irritation than where the globe remains.

"I have operated in this way upon several persons, both children and adults, with a uniformly satisfactory result, but only two or three of these cases present any peculiar features requiring comment.

"A little girl, aged seven years, was sent up to me, from the neighbourhood of Stony-Stratford, with an enormous staphyloma, both of the sclerotic and cornea, in the right eye, and a dense central opacity, with partial adhesion of the iris to it, and a very small, elliptical pupil behind the corneal cicatrix. Under the influence of chloroform, I removed the right globe, and enlarged the pupil in the left. The part rapidly healed, and the little patient left the hospital in a week quite cured, and with very useful vision, and though so young, wears an artificial eye. Had I pursued the more usual plan, the result would have been far less rapid and satisfactory. I have not met with a single exception, as yet, to this rapid union and recovery.

"Two cases of staphyloma have recently occurred, one under the care of my friend Mr. Bowman, and one to myself, in which the staphylomatous globes were the seat of severe and protracted inflammation, which was not only in itself a source of constant distress, but prevented all use of the other eye, causing extreme weakness and intolerance of light. The relief in both cases was rapid, marked, and permanent, far more so than if the diseased globes had been merely opened.

"I have now to consider those cases in which the presence of a foreign body is suspected in the globe, and is out of sight and out of reach, but produces pain, and sympathetically affects the other eye. In such cases I believe the removal of the globe is the best proceeding. I will briefly describe two instances of this kind that have come under my notice. The first was a young man named Smithers, who applied to me at the Ophthalmic Hospital last March. It appeared that, in June of the previous year (1854), when at work, the left eye was wounded by a piece of sharp steel, causing traumatic capsular cataract, with some adhesion of the pupil to the capsule. As the other eye was perfectly good, nothing was done for its removal. About six weeks previous to his coming to me, and about eight months after his first accident, the right eye was struck by a piece of metal, which was supposed to have entered the globe. On examination, I found the cicatrix of a wound of the cornea and sclerotic, iris and lens; there was constant and rather severe pain in the globe and over the brow, together with considerable lachrymation and congestion of vessels; and all vision, even the faintest perception of light, was lost in that eye. There was also evidence of sympathetic weakness in the other eye. For all practical purposes the poor fellow was blind. Before attempting any operation upon the left eye for the removal of the traumatic cataract, I extirpated the right globe. On laying it open, I found a piece of iron of considerable size deep within the globe, behind the iris, and partly adherent to the sclerotic, and surrounded with dense fibrin. Even if I had known its exact location, its removal would have been attended with considerable difficulty, and the result would have been less satisfactory. I then applied myself to the other eye, the management of which was attended with considerable difficulty, in consequence of the length of time that had elapsed since the accident, and the tough, elastic, and adherent condition of a large piece of opaque capsule. By means of two needles, after two efforts, I contrived to tear it through; but a narrow band still ran across the very centre of the pupil. This I, after some difficulty, succeeded in breaking by working two needles in such a way as to wind it round one by means of the other until it broke through. For a long time a fine thread floated by one loose end in the anterior chamber. A clear, round pupil was now obtained, and, by means of a suitable lens, he sees very well to do his work, and to recognize even rather minute objects.

"The other case was under the care of Mr. Bowman. A fine young man, a gamekeeper, was admitted into the Ophthalmic Hospital, having been shot in the eye some months previously. There was a traumatic cataract, an adherent pupil, a discoloured iris, and other evidence of a disorganized globe; there was no perception of light. He was subject to severe attacks of inflammation and pain of an intermittent character; but the most serious feature in the case was the gradual impairment in the sight of the other eye. The cornea was rather dull; the pupil sluggish; and there was a gauzy indistinctness about the vision. This had appeared about a month, and was gradually increasing. Mr. Bowman removed the globe; and in the interior a shot was found lodged. The man made a rapid recovery, not only as regards the part operated upon, but the other eye, that was the cause of much anxiety, perfectly recovered its healthy condition and normal sight.

"The effect of the operation in these two cases, and in all of the same type, is to free the part and the system of a constant source of irritation by the only available means.

"I have performed this operation in two cases of extensive adhesion between the globe and the lids. The first was a middle-aged female, who had suffered from severe purulent ophthalmia, which had caused sloughing of the cornea, and extensive adhesion of the upper lid to the globe, tying down the upper lid so as to occasion considerable irritation and deformity; in the other eye, the pupil was closed and adherent behind a dense central leucoma. I first made an artificial pupil; and then, finding the lens was opaque, I extracted it through the artificial pupil. The patient made a rapid recovery from both operations, and obtained some useful vision, and was able to wear an artificial eye.

"The other case was a girl, aged fourteen, whose eye had been extensively burnt with lime. The lower lid was completely adherent to the globe, and the upper lid was partially adherent; the entire rows of lashes of both eyes were turned in upon the globe, causing constant severe distress, and preventing the use of the other eye. The operation perfectly relieved all the symptoms and deformity, and was, I believe, the only effectual means that offered. Extensive separation of the globe from the lids had been previously tried, and had quite failed.

"I have now to consider, in the last place, those cases of deep-seated disease of the globe, the result either of accident or of idiopathic inflammation, with disorganization of all the structures, in which the companion eye exhibits symptoms of sympathetic affection, threatening gradual failure of sight. The idea upon which this operation is founded, and which I am free to admit requires for its confirmation a large mass of evidence—larger in fact than I am at present in a position to offer—takes its origin in the well-known sympathy that exists between the two eyes; in the symmetry of disease in these organs; in the frequent observation that when one eye has been destroyed, either by accident or disease, the other sooner or later becomes seriously compromised. The important problem to solve is how far the one is the result of the other. In those cases that result from accident there can be little doubt of the close connection between the two; in those resulting from disease this is not perhaps quite so clear. A dim trace of this idea has existed for years in the minds of ophthalmic surgeons. The operation for staphyloma has been sometimes performed principally with a view of getting rid of a source of irritation, and strengthening the other eye; a chalky lens has been often removed with a similar object; dislocated lenses and other foreign bodies have been extracted with a like view; and very recently Dr. Prichard, of Bristol, has brought forward several traumatic cases, in which the other eye is suffering, and in which he operated for the relief of the sympathizing organ. Even admitting that the failure of one eye is a consequence of the disorganization of the other, it by no means follows that the removal of the one will arrest the progress of disease in the other; *à priori* reasoning may suggest such a result; experience alone can establish it. With a view to clear up in some measure these points, I am induced to quote the following cases:—

"Early in January of this year a housekeeper at a wholesale establishment, aged forty-one, in good health, applied to me at the Ophthalmic Hospital. It appeared that about eight years ago she injured the right eye with a pair of scissors; the result was entire loss of vision in that eye, and the gradual occurrence of a circumscribed staphylomatous enlargement of the sclerotic coat. During the last twelvemonth the globe had been frequently the seat of severe pain, and the enlargement had considerably increased; but the chief source of alarm to the poor woman, and that which induced her to apply to me, was the occurrence of muscæ, with feebleness and indistinctness of vision in the other eye, the pupil of which was rather sluggish, and which was increasing from week to week, and seriously interfered with reading and working. I removed the diseased globe in my usual way. The parts healed in about ten days. Six weeks after this her report was that the muscæ had disappeared, and her sight was quite restored. She wore an artificial eye with very good effect. In my notes taken at the time I find the following entry: 'My chief reason for removing this globe was in the hope of saving the other eye.'

"On the 26th of March I again performed this operation on a young man, who applied to me at the Ophthalmic Hospital. The right eye was slightly staphylomatous; the surface of the cornea was covered with a yellow deposit, and some flakes of earthy matter. The sight of that eye had been entirely lost for above ten years; it was constantly inflaming, and was seldom free from pain. The sight of the other eye was beginning to fail, and, for all practical purposes, was nearly useless to him, though there was no evidence of disease in that eye; and it must be admitted that in this case it was difficult to say how far the feeble condition of the left eye was due to inability to look and to use the eye, and how far to actual impairment of sight. He made a rapid recovery, and his sight, or at any rate the use of his eye, was perfectly restored.

"The next case seems to me to be full of interest, and is perhaps the most conclusive that I have met with:—

"Matilda M——, aged fifty-three, was sent to me by my friend, Mr. Collambell, of Lambeth, about two years ago. In the left eye there was a small pupil adherent to a dense white opaque capsule; the iris was discoloured and convex; the anterior chamber very small; globe soft; no perception of light; frequent pain. In the right eye the surface of the iris was raised and velvety, the pupil small and sluggish, and sight was slightly impaired. In spite of the usual treatment, matters became gradually worse; and early in the spring of this year there was rather a rapid retrograde movement, all power of making out even very large print was lost, and even large objects could not be clearly distinguished. Seeing that every week this condition was increasing, as a *dernier ressort*, and with very faint hopes of even arresting the disease in its present state, I proposed extirpation of the globe. She consented; and at her request the operation was performed without chloroform, and did not seem to be very painful. The recovery was rapid. It was performed on the 17th of April; and ever since that time the sight has been gradually improving. She sees objects clearly, and reads large print. This is upon the whole the strongest and most satisfactory case I have had. The history, both before and after the operation, is well defined. The physical signs of disease were very obvious, and the physical change since the operation has been unmistakable.

"I have performed this operation in four other cases, presenting somewhat similar features, and not of sufficient individual interest to merit a separate description. In one only have I failed to trace any advantage from the plan; and, in that instance, the result was, as I believe, modified by pregnancy.

"I have been anxious to bring these cases before the notice of the profession, because they seem to suggest views, and a method of treatment, of a very novel and interesting character. Like all innovations, it is likely to give rise to considerable opposition from the public, and even from some part of the profession, and is very liable to be misunderstood and misrepresented to the damage of the proposer. The removal of the globe has been until a recent period regarded as a very severe and repulsive operation; and such a remedy may be considered by some as somewhat heroic, and hardly justifiable except in very extreme cases. If, however, we divest the inquiry of all preconceived prejudice, and carefully examine the naked facts of the case, how does it stand? Even suppose, for the sake of argument, that there is no truth in the idea that incipient disease in one eye may be so far dependent upon and connected with a disorganized condition in the other; that the removal of one suspends the disease in the other, still the operation may be useful. It is proposed to remove a part that is only termed by courtesy an eye, for it has forfeited every claim to that appellation; it is a mere bag distended with water, and containing, perhaps, some fibrinous and chalky *débris*, without any remains of that delicate nervous membrane to which the optical machine is subservient, and without a vestige of that function for which the eye was created; it is the seat of a slow inflammatory action, and forms a nidus for the sudden lighting up at any moment of acute disease, and is in itself a constant source of trouble. Surely it is no very cruel or unjustifiable act towards a patient to remove, by a safe and speedy operation, an organ that has lost its characteristic appearance, has ceased to perform its functions, and is a constant source of suffering, when its place may be artificially supplied so as to produce a much more satisfactory appearance than the diseased globe presented. If, however, we superadd to these considerations the possibility of removing incipient disease in the other eye, or even of arresting it at the point where we find it, the arguments in favour of the operation obtain immense accession of strength, and a new element is introduced into the pathology and treatment of certain forms of eye disease.

"Let us consider the various premises upon which this idea rests. It must be admitted that the intimate nervous connection between the two eyes, their close functional association, their proneness to take on the same diseases, either simultaneously or in rapid succession, and in exactly the same form—as, for example, cataract and various forms of ophthalmia—all suggest the probability that disease of one globe may impair the function of the other.

"Again, it has been for years a matter of frequent observation, on the part of ophthalmic surgeons, that any serious injury to the eye, destroying its function, is followed by gradual decay in the sight of the other. This will often occur in persons in other respects perfectly healthy, proving that no constitutional influence has been at work. I could quote numerous very painful cases of this kind that have come under my observation. Dr. Prichard, of Bristol, has published numerous cases of this description in the *Provincial Medical Journal*, some months ago, in which he proves statistically this important point. It is a very short step from this well ascertained fact to the probable existence of the same sympathy in cases of idiopathic disease of the globe. If the cause of failure of sight in the second eye be altogether due to the local influence of the diseased globe, and not to constitutional causes, it seems quite in accordance with analogy that the removal of the peccant organ should act favourably upon the other eye. If I add to this the cases I have already alluded to, in which considerable improvement of sight has followed this operation, I venture to hope that I have made out a strong case in its favour, and I venture to prophesy that it will take rank amongst the most valuable and useful operations in surgery. I am quite ready to admit that the subject is in its infancy, and requires further investigation, but it opens out a most interesting inquiry, pregnant with important results. My friend Mr. Bowman and myself are following out the subject. I anticipate much additional information from the labours of this gentleman, and I trust on a future occasion to lay before the profession the results of our inquiries in that wide field which our Ophthalmic Hospital presents.

"Since writing the above, it has occurred to me that it may be objected to the views that I have endeavoured to set forth, that there are a large mass of cases constantly coming before our notice, in which one eye has been lost, either from injury or disease, without the other sustaining any kind of damage. This circumstance does not, of course, invalidate the equally well observed fact, that in many cases the second eye does suffer; but it seems, at first sight, to stand in curious antagonism to it, and requires some explanation. It has often engaged my careful attention, and, after much observation, I am inclined to think that it will be found, that in those cases in which the second eye remains sound and healthy, no disease is going on in the lost eye; it is in a perfectly quiescent state. On the other hand, wherever the second eye is becoming involved, the disorganized globe, whether from traumatic or idiopathic causes, is in a smouldering state, and breaking out from time to time into active disease.

"It may also be objected to the views I have been endeavouring to set forth, that there seems no reason why the removal of a disease globe should be followed, not only by arrest of disease in the other, but also by perfect recovery of its function. After all, the chief court of appeal must be to experience and to well-observed facts, which are at present necessarily scanty, from the short time that has elapsed since the operation was first suggested. At the same time, it appears to be in accordance with analogy, that the removal of a serious source of irritation may not only produce an arrest in the progress of mischief in the other eye, but by leaving the curative efforts of Nature in full force, undisturbed and undiverted by the presence of contiguous and incurable disease, may contribute towards perfect recovery.

"Finally, I have to apologize for the length and tediousness of these remarks; but I trust I may be excused, in consideration of the novelty of the idea involved, and the momentous character of the interests at stake, being no less than the rescue of the sight of one that is threatened with failure, at a time when the other is hopelessly lost—a state of things deserving our most anxious consideration, and for which any really valuable suggestion must ever excite the deep interest of our profession."

Mr. Critchett's mode of operating is as follows:—

"I commence by dividing the conjunctival membrane as close as possible round the margin of the cornea. I then cut through the external rectus muscle, close to the sclerotic; then the superior and inferior rectus, and the obliqui; then draw the globe forwards and divide the optic nerve, turn the globe out of the orbit, and complete the operation by dividing the internal rectus. If rapidity of execution, absence of hemorrhage, freedom from constitutional or local disturbance, and a speedy cure, form the elements of a mild operation, then I do not hesitate to rank this procedure, formerly deemed so severe, amongst the simplest and safest operations of surgery. I have now operated in this way about twenty times, and in no instance have I met with an exception to this statement."

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37. *Operation for Partial Staphyloma of the Cornea.*—Dr. A. Quadri calls attention to a mode of operation, long since instituted by his father, J. B. Quadri, of Naples. The case in which he exemplifies it occurred in a child, aged 6 years, who, as the result of a scrofulous ophthalmia, exhibited a staphyloma at the lower and inner parts of the left cornea, which gradually increased until the pupil was covered, and vision lost, about a third of the cornea remaining uncovered. The patient being etherized, a knife was passed through the cornea as in the operation for cataract. It was found to be so thin, that after the incision, it became flaccid, and the staphyloma disappeared. The flap was seized by the forceps, and a small portion of its lower part cut off. The eye was kept closed until the third day, when, on examination, a loss of substance was observed at the base of the staphyloma, having a circular form like an ulcer of the cornea, and being surrounded by a whitish areola. To prevent prolapse, the eyelids were again carefully closed, and the case left to nature. At the end of eighteen days, the eye was reopened, and cicatrization was found to be complete. The cornea seemed, perhaps, a little flattened, as compared with that of the other eye. The upper part, which had continued transparent, had descended to opposite the pupil, so that the patient now began to see again. After employing laudanum for some time, the cornea became clearer around the cicatrix, and the portion of it covering the pupil was quite transparent. There only remained an anterior synæchia, which prevented the pupillary motion at the lower part.

This observation not only shows the great utility of the operation, but also, contrary to the opinion of Scarpa, the little thickness of the cornea in some of the staphylomas of children. In the present case, it was thinner than in the normal state, and had neither the hardness nor alveolar structure indicated by Scarpa.

M. Warlomont states that, since he has received M. Quadri's communication, he has practised this operation for partial staphyloma twice, with success. In the first of these cases, in which there existed a considerable staphyloma at the lower part of the cornea, with preservation of some transparency in the upper segment, the ablation of a flap restored to the cornea nearly its normal form and convexity; and the operation in the second case was still more successful. It is to be observed, that the loss of substance practised on the cornea should be much less considerable than would seem to be required for the correction of the deformity. The facility with which the lips of the wound unite renders the operation, when skilfully performed, almost inoffensive; still, it is a delicate operation, and for its due performance, especially in children, the induction of anæsthesia is indispensable. As to the place of election for the excision of the flap, we havs always to fear, when it is made below, that the resulting cicatrix may intercept some of the luminous rays. When made at the upper part, a portion of the iris might chance to become engaged in the wound, and the pupil might then be drawn up beneath the upper lid. Seeing, too, the difficulty of operating upon the inner side, M. Warlomont recommends that the excision should be made externally, as any cicatrix or traction of the pupil that might result would prove there of comparatively little consequence.—*B. & F. Med.-Chirurg. Rev.*, Oct. 1855, from *Annales d' Oculistique*, t. xxxiv.

MIDWIFERY.

38. *Modifications of the Uterus at the Menstrual Epoch.*—1. M. Ch. Judee relates the appearances found on *post-mortem* examination of the bodies of three women who died about the epoch of menstruation. His observations are of great interest, and as it is of importance to collect facts of this nature, we give them in detail. *Case* 1, was that of a young woman who died of acute delirium, on July 17, 1853, in the Salpêtrière. A few drops of blood had escaped from the vagina the night before she died. The body of the uterus was voluminous; its walls thickened. On the whole internal surface was seen a layer of gelatinous appearance and consistency, of about two millimetres in thickness. The colour of this was light red; it ceased abruptly at the upper orifice of the neck. The interior of the neck was of a yellowish colour; it appeared to have undergone no modification under the influence of menstruation. The os tincæ was swollen, so as to narrow the orifice; its colour of a deep blue: some spots were black like lung struck with apoplexy. On squeezing it, droplets of blood oozed out. On section (longitudinal) of the organ, the tissue of the body and of the neck was found to be normal; at the level of the lips of the os uteri this appearance vanished, and was replaced by a kind of magma, containing in its interior traces of fibres, presenting much the aspect of pulmonary apoplexy.

Appendages of the Uterus.—The right ligament exhibited marked congestion, and a beautiful capillary network. The same injection was seen on the outside of the Fallopian tube; the inside was in the same condition, especially near the uterine end. The kind of membrane, of light red, described in the uterine cavity, existed also near this point, and was thick enough to nearly close the tube. (Owing, we presume, to a printer's error in the original, we are unable to refer the following appearances to the proper ovary—both are called left.) On the external surface was a prominence the size of a cherry, of a deepish black, surrounded by a red areola, fading away in intensity. On one of its sides was a hole, admitting a probe. On dividing the ovary, there were seen, besides numerous scars, four bodies, of various shapes. The deepest, of the size of a hemp-seed, looked like a white membrane folded many times on itself. The next, somewhat bigger, was principally formed by fibres, crossed in all directions, colour bluish. The third was nearly superficial, bigger than either of the preceding, its colour deep red. The fourth was the biggest of all, and equal to one-third the bulk of the entire organ. It was immediately in apposition with the fibrous envelope of the ovary. It was formed of two distinct parts: one external, of irregular form, toothed throughout its interior, and of a deep red colour: then there was a membrane investing all the toothings, and serving as a pouch, for a clot of a colour much less deep than the most external one. It cannot be doubted that these two latter were corpora lutea.

Case 2. A woman entered the Salpêtrière on January 27, 1854, and died on the 6th of February following; she was seized with delirium, then a few days afterwards the menses appeared, and did not cease to flow till six days before death.

The uterus appeared more voluminous than usual. Its internal surface was lined by a kind of membrane, thick and hard, of a deep brown-red. This could be easily raised off by the handle of the scalpel; it disappeared at the level of the neck. The os tincæ was dark red, soft, and easily lacerable. The left Fallopian tube was congested; the left ovary the same; it contained a corpus luteum filled with coagulated blood, of the size of a nut, and on its surface a scar.

Case 3. A woman, aged 23, entered the Hôtel Dieu on August 6, and died the same day. She had hanged herself.

The uterus seemed increased in volume. The cavity was larger than in the physiological state; it was lined by a soft, reddish membrane, of five or six millimetres' thickness, easy to remove by scraping with the handle of the scalpel. Examined by a lens, it presented the appearance of a very full and beautiful capillary network, inclosed in a membrane like a mucous membrane. This membrane was continued into the Fallopian tubes, but ceased at the orifice of the os internum uteri. The os tincæ, on the other hand, was strongly congested, and resembled, in aspect, an apoplectic lung. The right ovary, which was very large, contained a corpus luteum of the size of an almond, showing a scar yet imperfectly closed.

M. Judée enunciates the following conclusions:—

1. The blood which escapes by the vagina at the menstrual epoch, proceeds neither from the cavity of the uterus nor from that of the cervix.

2. It proceeds entirely from the lips of the cervix, which are strongly congested at that time.—*B. & F. Med.-Chirurg. Rev.*, Oct. 1855, from *Rev. Med. Chirurg.*, April, 1855.

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39. *On the Condition of the Neck of the Uterus during Pregnancy.*—Such is the title of a memoir read by M. Cazeau before the Société de Chirurgie, and upon which M. Laborie has drawn up a report, with an interest and labour seldom bestowed upon this task in the learned societies of the continent.

The neck of the uterus, in the pregnant female, has often been subjected to examination, as far as that can be made by touch alone; but it is only of recent date that another method of investigation, in this respect, has been afforded, in the employment of the speculum vaginæ, and it is the results obtained from researches by means of this instrument, that M. Cazeau describes. According to these observations, he states that, in primiparæ as well as in multiparæ, the vaginal portion of the neck of the uterus is of a dark red colour (lié-de-vin), and, in primiparæ, its whole surface presents a smooth appearance. The os uteri, of which the lips are very soft, is in general more or less rounded, and of a larger size than in the unimpregnated condition. The free portion of the neck in a very few cases exhibits ulcerations, and more frequently granulations of a cherry red colour, and bleeding easily. Among the multiparæ the neck is larger; the opening is divided into different portions; it is large, and the interior of it admits of being examined. The walls of this part of the organ are irregular, and present a number of fungous elevations which bleed readily, in the hollows between which are occasionally observed ulcerations of a linear shape, and more or less deep. M. Cazeau regards these ulcerations as of little importance, and disapproves of any treatment for their removal.

MM. Boys de Loury, Costillies, and Coffin, consider the ulcerations of the first period of pregnancy as having a marked influence in the production of abortions.

Admitting so far this opinion, M. Cazeau rejects it in its application to the ulcerations of the last months of utero-gestation; and, according to this view, he proposes that no treatment should be adopted in the latter cases. Thus, with the exception of specific ulcers, M. Cazeau considers that the others should not be interfered with, and, unless an excessive tendency to spread were manifested, no local means of treatment should be employed.

We give a *resumé* of the interesting discussion in the society.

M. Gosselin does not consider ulceration of the neck of the pregnant uterus so frequent as M. Cazeau; nor does he think that it exerts any unfavourable influence on the progress of gestation. If such an opinion has been advanced, it probably arose from exclusively attending to ulcerations, and overlooking other morbid conditions existing during pregnancy, and which are the true causes of abortion: such are uterine catarrh, in which the uterus suffers as much as in the evolution of a fœtus; leucorrhœa; or even constitutional syphilis. There may be added to these the repetition of examinations with the speculum, or the injudicious employment of internal remedies. In short, M. Gosselin believes that the influence of ulcerations of the neck of the uterus in the production of abortion, is very doubtful.

M. DANYAU has investigated, at the Maternity Hospital, the condition of the neck of the uterus in 22 pregnant women. Of that number, 8 presented erosions on the surface, and a fungous condition of the neck; in 6 others the erosions occupied the os tincæ; the remaining 8 exhibited no ulcerations whatever, and the neck of the uterus was merely irregular in shape and of a violet colour. These last cases had reached the final period of utero-gestation. The erosions were generally accompanied by a uterine catarrh. Only two presented this uterine catarrh without any erosion.

M. CLOQUET considers these ulcerations of the neck of the uterus as more frequent in the last month of pregnancy. He does not, however, regard them as true ulcers, but as an enlargement (*boursouflement*) of the follicles and papillæ of the neck, or as a congested state of these papillæ, with abrasion of the epithelium. He compares them to the strawberry-like surface of certain hemorrhoidal tumours, bleeding like these upon the slightest touch, and secreting a mucous or a muco-purulent fluid. M. Cloquet has never considered it necessary to cauterize them, or to employ any other means than astringent injections in their treatment, when they occasion either discharge or hemorrhage. After delivery these vegetations disappear spontaneously, in the same manner as the hemorrhoids and varicose veins connected with pregnancy.

M. VOILLEMIER has found no ulcerations in a large number of women, arrived at the eighth month of pregnancy, who had been examined by him with the speculum.

M. GERDY has observed soft fungous erosions on the neck of the uterus in pregnant women; these erosions disappeared after the accouchement. He considers that the engorged state of the veins from the sinking of the uterus, accounts for the violaceous colour of the vulva, the vagina, and the neck, and recommends the horizontal posture, with the view of relieving this engorgement.

M. HUGUIER believes that four different affections of the uterus require to be considered separately; these are, catarrh, granulations, ulcerations, and the fungous condition of the neck.

1*st*, Catarrh. This occurs in nearly all women when advanced as far as the last month of pregnancy, and, according to M. Huguier, proceeds from an increase, with or without inflammation in the mucous follicles, of the gelatiniform secretion, natural at this period.

2*d*, Granulations. He divides these into three varieties, one formed by an hypertrophied state of the papillæ and mucous membrane, and co-existing with granular vaginitis. Another consists of true vegetations, and coexists with analogous vegetations on the vaginal walls or vulva. A third kind are situated round the os, and consist in an hypertrophy of the mucous follicles, or an accumulation of mucus within their cavity.

3*d*, Ulcerations. These he considers rare during pregnancy, but simulated by other states of the os and neck, from the muco-purulent fluid often lodging about it at this period.

4*th*, Fungous state of neck. This condition M. Huguier alleges to be the consequence of, and, in fact, inherent to pregnancy, and to consist in an inflamed, softened, and swollen state of the parts in the neighbourhood of the os tincæ. He considers these conditions as of trivial importance, and employs means of the most simple nature for their treatment.—*Monthly Journ. Med.*, June, 1855, from *L'Union Med.*, April 21, 1855.

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40. *Cæsarean Section Successfully Performed for the Second Time on the same Patient.*—For upwards of fifty years, Prof. STOLTZ, of Strasbourg, remarks (*Gazette Médicale*, June 16th and 23d), the Cæsarean section, although frequently resorted to in Paris, has not generally been followed by success, whilst towards

the close of the last century, it was in numerous instances attended with the best results, in the hands of the celebrated accoucheurs of that period, Lauversat, Deleurye, Coutouly, Millot, etc. This failure of the operation, in the practice of modern surgeons, he considers as having led to its being regarded as much more hazardous than it really is, and to its consequent restriction to those cases in which it is found impossible to effect delivery by any other method. Thus, the accoucheurs of Paris have nearly all been induced to adopt the English practice, according to which, rather than risk the life of the mother, they sacrifice that of the child, wherever the difficulty appears surmountable by so doing; a proceeding which our author believes to be unjustifiable, on the grounds that one life is taken without any certainty of thus saving the other. M. Stoltz has performed the Cæsarean operation six times, with the result of saving both mother and infant in four of these instances, and the child in the remaining two. The latest of these cases is that which he communicates to the Academy of Sciences, as possessing additional interest in the fact of its being the second occasion in which the operation had been performed, with complete success, on the same individual.

The patient, Adele Fenninger, æt. 39, was the subject of general rachitic deformity, and had been operated on, three years previously, by Dr. Bach, of Strasbourg, who published the case in the *Gazette Médicale* of that city, in 1846. On that occasion the operation was successful, although performed under very unfavourable circumstances, the patient being "radicalement" rachitic, in very delicate health, ill-nournished, and suffering from considerable obliquity of the uterus. At the time of the operation, somewhat too large an incision in the abdominal and uterine walls was attended with troublesome protrusion of the intestines; and during the progress of the case, erysipelatous inflammation of the points of suture, and phlebitis, followed by œdema of the left inferior extremity, were circumstances which more than once threatened the life of the patient; however, by careful attention, these dangers were averted, and a complete cure was obtained in the space of two and a half months.

The second operation, which presents no features of much importance, is minutely described by M. Stoltz, who remarks, that from the ordinary course of the second pregnancy, three years after the first operation, it may be concluded that the cicatrization of the uterus had been sufficiently perfect to resist with impunity a second dilatation of that organ; and that the second operation, like the first, had been complete in its success, mother and child being both saved. In conclusion, he refers to a number of other instances where the operation had been repeatedly performed on the same patient with successful results. The following published cases are enumerated by him, and the publication mentioned in which they are to be found:—

Dr. Mangold, of Bale, operated, first in 1797, and again in 1801, and M. Mautz, in 1807, upon the same patient, who died on the twenty-second day after the third operation.

Dr. Bacqua, of Nantes, operated successfully on one patient, first in 1797, and again in 1806.

Dr. Dariste, of Martinique, operated successfully on one patient in 1805 and 1807.

Dr. Lemaistre, d'Aix, operated three times on one patient, in 1805, 1807, and 1814. The patient died five days after the last operation.

Dr. Charmeil operated in 1813 (?), and another surgeon in 1814, on one patient, each successfully.

Chaussier communicates the successful performance of the operation a second time.

Merrem, of Cologne, operated successfully on the patient, first in 1821, and again in 1826. Dr. Zwanck operated for the first time on a patient named Adametz; Dr. Weidemann operation a second time; Dr. Michaelis a third, and again a fourth time, with success.

Dr. Rouvin communicates a case where the operation was repeated with success. Dr. Bowen performed the operation twice on one patient, in 1833 and 1835, with success.

Professor Kilian, of Bonn, operated successfully on one patient, first in 1832, and then in 1838. In another case, he operated in 1837, and the same patient recovered from a repetition of the operation in 1843.

Dr. Mestenhaeuser operated successfully on one patient in 1840 and 1844.

Here, then, adds M. Stoltz, are fourteen well authenticated instances of this operation having been successfully repeated in the same patients. In two of the cases mentioned, the operation was performed three different times, but, on the last occasions, followed by the death of the mother. In a third instance, however, it was performed no less than four times with complete success. This example would almost induce him to believe in those cases quoted by some authors, where women were said to have undergone the Cæsarian section six or seven times.

41. *On the Mode of Presentation of Dead Children in Labour.*—The *Association Medical Journal* for Aug. 31, contains an interesting paper on this subject by Dr. J. Mathews Duncan. The following are the author's conclusions drawn from the observations he has made:—

1. The healthy fœtus floats obliquely, with its head lowest, in a fluid of its own specific gravity—a position corresponding to that it has *in utero.*

2. The fœtus has a specific gravity of about 1050, while that of the liquor amnii, at the full time, is nearly 1010.

3. Soon after the death of the fœtus *in utero,* changes take place in it (probably chiefly in the brain) which alter its position of equilibrium in a fluid of its own specific gravity, so as to be generally the reverse of that of the healthy fœtus; that is, so as to be oblique, with its head highest.

4. It may happen that an advanced stage of decomposition of the fœtus, with collapse of the cranium, may make its position of equilibrium, when floating, again oblique, with the head lowest.

5. These circumstances have probably considerable influence in determining the frequent malpresentations of dead children.

42. *Placenta Prœvia.*—Mr. J. Thomson gives (*Glasgow Medical Journal,* July, 1855) a statistical report of three thousand three hundred cases of obstetricy, in which there were five cases of placental presentation. The mother, in three of these cases, recovered; in two died; all the children were stillborn. The details of two of these cases which he gives are as follows:—

Case 1. "I was sent for to visit Mrs. C., resident four miles from town, on the 11th October, at four P. M., and who, I was informed, had experienced repeated attacks of hemorrhage during the preceding two months. On arriving at her house, I found that she had already fainted several times, and that, with every successive pain, the flooding was severe. Her skin was cold to the touch, the pulse rapid and scarcely perceptible at the wrist. On examination, the placenta was felt protruding through the soft and yielding os uteri. Without loss of time, the hand was introduced, the child turned, and delivered stillborn. Immediately afterwards, the placenta came away, almost without any further loss of blood. All this was accomplished in less than fifteen minutes after I entered the house. I remained with the patient for an hour afterwards, and during this time there was no tendency to syncope, although the pulse still remained extremely weak and beating upwards of 120. After giving suitable instructions, I left, requesting that I should be sent for if she became worse during the night. Next day I found her weak, but without any other complaint. The pulse was somewhat stronger, though nearly as rapid as before. From this period she continued slowly to improve up to the eighth day, when I was again summoned in great haste. I found that, while sitting up in bed, taking breakfast, she had fainted. She had been immediately placed in the horizontal position, and had the pillows removed from under her head. This, and the administration of some cordials, soon restored her to consciousness. From this time she continued to improve, till the beginning of the following week. She then began to talk incoherently, and to show decided indications of an attack of puerperal mania."

Case 2. "At eight A. M. of the 1st December, I was sent for to visit Mrs.

A., who was said to be advanced to her eighth month of pregnancy. About three weeks previous to this period, she had become affected with a severe cough, which often prevented her from enjoying rest during the night. About an hour before my visit, and while suffering from a severe paroxysm of coughing, a sudden discharge of blood took place from the vagina. When I arrived, I found that the flooding still continued, and that occasional pains were felt in the back. When the large coagula which plugged the vagina had been cleared away, the os uteri was felt high up, and completely closed. In these circumstances, I followed the advice given by Burns, when he says: 'If the os uteri be firm and close in a first attack, we ought to use the plug, which will restrain the hemorrhage, and insure the present safety of the patient.' This measure arrested the hemorrhage during the whole day. Next morning, about eight o'clock, I was again called. On inquiry, I found that the plug had been removed during the night, and that the flooding had been immediately renewed. Through some mistake, I was, unfortunately, not sent for for some hours afterwards. Though the flooding had evidently been great, yet the patient had shown no tendency to syncope, but looked pale and exsanguine, and the pulse had risen to 150. The os uteri was now found dilated to the size of half-a-crown, and the placenta entirely implanted over it. This being ascertained, the turning and delivery of the child was the work of a very few minutes, and this was effected with very little additional loss of blood. The patient expressed herself as comfortable, and with the exception of the rapidity of the pulse, everything seemed to wear a favourable aspect. There was no jactitation, no tendency to syncope, and nothing to excite immediate alarm, but the extent of the flooding, which had evidently been great. The placenta was brought away very soon after the birth of the child, and the uterus above the pubis was felt to be firm and well contracted. A glass of wine was given, and this was succeeded by a dose of morphia. During the day she continued in a pretty comfortable state, and was able to take some light nourishment. By the morning of the third, reaction had taken place, the skin had become hot, the breathing hurried, the thirst urgent, the tongue dry, and the pulse had risen to 160. A diaphoretic and sedative mixture was now prescribed. By the evening she was slightly delirious, restless, and uneasy. The uterus from the beginning was felt firmly contracted, and the abdomen was soft, without tumidity, or pain even on firm pressure. The lochial discharge was moderate from the first. On the morning of the fourth, the heat of the skin was reduced to a moderate temperature, but the pulse was not improved. The condition of the patient was now perilous in the extreme, and every appliance which science or experience could suggest was unremittingly and perseveringly applied. All, however, was of no avail, and she died on the morning of the fifth, exactly three days after her delivery."

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43. *On the Influence of Compression by the Maternal Soft Parts during Natural Labour.*—It occasionally happens in those accouchements where the employment of the forceps has been found necessary, that the infants born are attacked, immediately or a short time afterwards, by symptoms of congestion or compression of the brain. Fatal consequences frequently follow, and upon *post-mortem* examination, there are found considerably sanguineous effusion on the surface of the brain, injection of the choroid plexus, etc.; in short, lesions indicative of the injurious pressure to which the head had been exposed during labour.

M. Charrier details three such cases, the only difference being that the labour was natural and of ordinary duration; but, from the anatomical peculiarities presented by the infants, he considers both orders of cases as referable to the same immediate cause, viz: pressure on the brain.

In the first of these instances, the mother was healthy and the pelvis well formed; delivery was completed in six hours, and the child appeared strong and vigorous. Some days afterwards, however, cerebral symptoms began to show themselves, and on the third day from their commencement, coma and death took place. Upon *post-mortem* examination, the pia mater was found considerably injected; the sinuses were gorged with blood of a dark colour and syrupy consistence; the choroid plexus was much injected; bloody serum was found in the ventricles; there was effusion of blood at the base of the brain, and the substance of both the brain and cerebellum was of a rosaceous colour. The other viscera were healthy. In removing the calvarium, the bone was found of such extreme tenuity as to be quite translucent—it could be depressed by the finger without breaking, and it regained its original form by its own elasticity.

The absence of any violence or protracted duration in the accouchement; the absence of any apparent hereditary predisposition to cerebral disease; and the fact of the mother being well formed, all led him to the conclusion that the death of the child resulted from the thinness and depressibility of the bones of the cranium, allowing of undue pressure on its contents during labour.

The second case was one where the infant became comatose on the second day after birth. Respiration slow, 24 inspirations in the minute; pulse small, and 115. The symptoms became more and more aggravated until the eighth day after their commencement, when death took place, preceded by slight convulsions. At the autopsy there were observed: general congestion of the surface of the brain; serous effusions between the hemispheres; and effusion of blood at the base. The other viscera were healthy. The cranial bones were not so thin in this as in the first case, but the fontanelles were very large, and the sutures open. The diameter of the head was normal,

In the third case, the infant was seized on the sixth day with symptoms of a cerebral nature, and on the eighth a fatal termination ensued. The appearances disclosed upon *post-mortem* examination were similar to those of the second case, and, as in it, the fontanelles were here of unusual size, and the sutures separated.

It is only necessary to repeat, says M. Charrier, what has been before remarked, that the compression of the skull and brain by the uterus and maternal soft parts during labour, was the cause of the symptoms observed in these cases during life, and the appearances presented upon *post-mortem* examination. The lesions discovered in the three subjects examined were precisely such as are exhibited by those cases where death results from the application of the forceps, and appear quite sufficient to explain the symptoms manifesting themselves during life.

In a report upon this paper by M. Danyau, and read to the "Société de Chirurgie," it is considered doubtful whether imperfect ossification of the cranial bones can exclusively account for the production of those effects attributed by M. Charrier to this cause. M. Danyau is of the opinion that other circumstances should have been taken into account, as for example, the condition of the vascular system within the cranium; a predisposition to congestion; liability to rupture of the vessels, etc. In the absence of other indications, however, he considers death, in such cases, to be justifiably assignable to the causes laid down by M. Charrier.

Following up the inquiry on this subject, a communication has since appeared by M. Ancelon, in which he suggests that incomplete ossification of the skull not only conduces directly to pressure on the brain, but from the maternal passages in consequence, being imperfectly opened, the liver of the infant suffers by compression, arising indirectly from the same cause. He believes, moreover, that, in those cases of imperfect ossification there generally exists, along with it, some constitutional taint in both the mother and child; and he concludes his paper by remarking:—

1*st.* That owing to some peculiar diathesis, the process of ossification in the fœtus becomes retarded, and the power of resisting pressure during labour consequently diminished.

2*d.* During labour the maternal soft parts exercise a degree of pressure on the liver, proportionately greater as the ossification of the head is less complete.

3*d.* The diathesis alluded to, in conjunction with contusion of the liver, explains the fatal result in M. Charrier's cases.—*Monthly Journ. Med.*, June, 1855, from *Gaz. des Hôpitaux*, April 24, and May 5, 1855.

44. *Parturition arrested by a large Calculus in the Bladder.*—Mr. Erichsen exhibited to the Pathological Society of London, Nov. 20, 1855, a large calculus from the female bladder, which had arrested parturition, from a woman twenty-five years of age, who was confined with her first child in October. The accoucheur found a large tumour obstructing the passage of the head, and he was compelled to perform craniotomy in order to effect delivery. On examination, the tumour was found to be a vesical calculus, which had never previously been detected or suspected, although the patient had suffered from childhood from irritability of the bladder. She was sent up to Mr. Erichsen from the country three weeks after delivery. On examination, a large calculus was found bulging the posterior wall of the bladder into the vagina. The parts were very tender. She suffered the most excruciating and constant agony, and wished that the stone might at once be removed. She was kept in hospital for a few days, and then the calculus was cut out through the vagina, by the vesico-vaginal operation. The stone weighed five ounces and a half, and measured eight inches in the long and six in the short circumference. The patient went on well for about eight days, when she suddenly died exhausted. On *post-mortem* examination, extensive disease of the kidneys was found; the right was converted into a mere cyst, and the left was in a state of chronic pyelitis, with great dilatation of the ureter. The case is interesting—first, on account of the very large size of the stone; secondly, from its obstructing parturition, an occurrence of which he (Mr. Erichsen) had not been able to find another instance; thirdly, from the absence of symptoms of sufficient urgency to lead to its detection until after the parts had been dilated, and probably bruised, by the efforts during delivery.

In reply to a question from Mr. Holmes, whether there had been any objection to the high operation, Mr. Erichsen said he had considered that, but preferred the vesico-vaginal operation, as being more likely to relieve the condition of the bladder in a shorter time, and secure a depending opening. He was afraid to submit the woman to any operation that would give inconvenience, as the lower fundus of the bladder was very irritable and thin.

45. *Extraordinary Length of the Funis.*—Mr. John Rouse records (*Lancet*, Sept. 1, 1855) a case in which the funis was fifty-one inches long, and was coiled six times around the neck of the child, and once around the left thigh.

46. *Spontaneous Restoration of the Retroverted Gravid Uterus.* By Francis H. Ramsbotham, M. D., &c.—In the *Medical Times and Gazette* for October 23, 1852, will be found eight cases of retroversion of the gravid uterus, treated by me, which go far to prove the truth of the position laid down by Denman—in opposition to the doctrine inculcated by William Hunter, Baudelocque, and others—that if the bladder be kept duly empty, the womb will, in the great majority of instances, spontaneously regain its natural position, without the employment of any manual operation, beyond the frequent introduction of the catheter.

Since some members of the profession, however, may still incline to the opinion that the use of active means is absolutely required for its restoration, and, as consequently forcible attempts to push the fundus upwards, may very likely be had recourse to unnecessarily, I think the publication of every case that tends to confirm our reliance on the passive mode of treatment useful; and with this view I beg to call attention to the following:—

A. G. of Hannibal Road, Stepney, aged forty-one years, married twenty-one years, having had nine children, and suffered two miscarriages—the last at two months, in January of this year—applied to me among the out-patients at the London Hospital, on Saturday, the 29th of last September. She stated that she had not menstruated since the middle of June, that seven days before, while lifting a heavy pail full of water out of the water-butt, she felt a sudden pain at the lower part of the abdomen; this was followed by some difficulty in passing urine, though it did not amount to an absolute stoppage. On the next Tuesday however, after riding from Stepney to Pimlico in an omnibus, which shook her exceedingly, she found she was quite unable to expel the least quantity from the bladder. On her return home, the urine was drawn off by the catheter, and the same instrument was used again on Wednesday, but not by the same gentleman. From that day till I saw her on the Saturday, the catheter had not again been had recourse to, nor had she passed any urine voluntarily; though some had dribbled away at different times, or come in gushes. The bowels had not acted since Tuesday. She did not know whether she was pregnant or not; but inclined to the latter opinion.

She appeared to be in great pain, and her countenance was indicative of much distress. Independently of the agony of a distended bladder, she complained of a violent forcing and bearing down, and a tearing and dragging sensation at the groins.

The history and symptoms led me immediately to suspect that the uterus was gravid and retroverted. I found the bladder largely filling the lower half of the abdominal cavity, its fundus rising as high as the umbilicus; introduced the catheter without delay, and drew off the enormous quantity of ninety-two ounces of dark-coloured, but not offensive urine. On making a careful examination, my suspicions were confirmed; for the hollow of the sacrum was occupied by a hard tumour, which was, indeed, the fundus and body of the uterus; while the mouth of that organ was canted upwards and forwards, behind or rather above the symphysis pubis. The anterior face of the vagina was considerably stretched, and there was general tenderness of the whole pelvic structures.

I admitted her into the hospital, and ordered her to bed; fomentations were applied, and she took 30 minims of laudanum. My resident assistant was directed to draw off the urine every eight hours, and to administer some castor oil the next morning. The medicine acted satisfactorily on the bowels in the course of the day; the bladder was kept empty as described; she was confined scrupulously to the recumbent position; no attempt was made to replace the uterus artificially; nor was any fresh vaginal examination even instituted; and in three days she was able to void her urine of her own accord satisfactorily. The anxiety of countenance had then disappeared, and she expressed herself as feeling quite well. On examination per vaginam, the fundus uteri was now no longer to be felt in the pelvic cavity, the os uteri was in its natural situation, and none of the previous tenderness remained. I kept her in the hospital merely for the sake of precaution, to prevent a recurrence of the accident, for a fortnight. During this interval she was confined to bed; was enjoined to pass water frequently; and, when she attempted to do so, to place herself on her hands and knees. She left the house on October 13, and is going on in pregnancy, not having experienced any return of the symptoms. She tells me that she quickened last week.

No case could more strongly prove the value of rest and the recumbent posture, together with a diligent attention to the bladder, under such circumstances, than this does. I scarcely expected that the uterus would have righted itself so speedily, after having been three days partially, and four completely, retroverted, with its fundus pressed so low down towards the perinæum as this was; and I was prepared to use some mechanical efforts to restore it, if it had continued in this abnormal position for two or three days longer.—*Med. Times and Gaz.*, Dec. 1, 1855.

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47. *Puerperal Fever.*—Dr. ATTHILL communicated to the Dublin Obstetrical Society, May 21, 1855, the following cases of puerperal fever, which occurred in the Rotundo Hospital last year:—

Case 1. M. D. was delivered of her first child, after a natural labour, on the 2d March; her aspect was very unhealthy, but she denied having ever been ill. She complained of giddiness and pain in her head very soon after her delivery; under treatment these unpleasant symptoms gradually subsided, and she appeared to be doing well. On the 7th she complained of slight abdominal tenderness. She was at once put on blue pill and Dover's powder. On the 9th she was worse, and was ordered wine and carbonate of ammonia; her pulse, throughout her illness, was very rapid, never being under 120. Notwithstanding the free use of stimulants, she sank rapidly, and died on the 18th.

Post-mortem examination disclosed extensive peritonitis, with uterine phlebitis.

Case 2. Bridget Allen, aged 27; third pregnancy; admitted about 18th March; natural labour; went on well till her fifth day, when she complained of pain in her *left* knee. This was relieved by the application of leeches, but it was only temporary, and on her eighth day she was put on calomel and opium; wine was also given, in large quantities, from this time. On the following day all the joints of her *right* hand were affected, and the abdomen became tympanitic. Ammonia and wine were exhibited without benefit, and she died on the fourteenth day after her delivery. *Post-mortem* examination discovered pus on the uterine sinuses, and purulent deposit on the affected joints.

Case 3. Eliza Brannagan, admitted 3d April; a healthy young woman, aged 20; first pregnancy. Her labour was easy and natural. On the third day she was seized with a rigor of no great severity, and on the day following complained of pain and pressure over the uterus; twelve leeches were applied, and the pain and tenderness completely disappeared; but in the middle of the next day her *left* knee suddenly became very painful and swelled rapidly; and on the day but one following, the right wrist was affected in a similar manner (in this case the inflammation did not subside in the knee on the wrist becoming engaged, though the pain in the former named joint was less intense): from this time, till the date of her death, which took place after the lapse of four days, she suffered the most agonizing pain in the wrist. She was tympanitic, but only for the last twenty-four hours of her life.

In this case, as in No. 2, pus was found in the joints and in the uterine sinuses.

Case 4. Ann Norton, aged 23; first pregnancy; admitted April 7; child presented with the feet; but delivery was effected without difficulty. On the day after her delivery she complained of tenderness on pressure over the uterus; she had previously had a slight rigor. Being a plethoric young woman, she was bled to eighteen ounces with apparent benefit, for the tenderness disappeared; but on the very next day the left wrist became painful. This, however, she asserted was the result of a fall, by which that joint was sprained, a few days before admission; there was little or no external redness in the joint, and no appreciable swelling, but she complained of the intense pain; no other joint was affected, and she remained to the last free from abdominal pain or tenderness. The pulse never was under 120 in the minute.

Wine, ammonia, and other stimulants, were administered very freely, but without benefit. She died on the eighth day after her delivery.

Post-mortem Examination.—Pus in the uterine sinuses, but none in the joint. This was the only case in which venesection was had recourse to, and, perhaps, it was owing to this that no pus appeared in the joints, as in the other cases; but certainly this treatment was productive of no benefit, and if it did not accelerate, it did not retard death.

From this time, viz: 15th April, till the 1st July, no case of either peritonitis or phlebitis occurred in the hospital; but on that day a patient, who had been delivered with the forceps after a tedious labour, was attacked with peritonitis, and died on the 4th. There was nothing remarkable in her case.

Case 5. On the 9th July a woman, who had been confined on the 7th, after a rather tedious labour, suddenly became tympanitic. She died on the 18th, with all the symptoms of peritonitis. On the 17th, the day after her death, patients were again admitted into the same ward in which she was delivered, but no patient was placed in the bed she had occupied. This ward consists of two rooms opening off each other, the larger one containing eight beds; the smaller, in which this patient had lain, having only two. Now all the patients in the large ward recovered speedily, but the woman who lay in the bed in the small ward, adjoining that in which the fatal case occurred, exhibited symptoms of peritonitis, which, however, yielded to treatment, and, after a tedious convalescence, she went out quite well. On the 26th and 28th July two patients were delivered in the beds which were in the small room of the same ward (it should be remembered that since the 10th no fatal case had occurred in the hospital, nor, except the one just alluded to, had any shown symptoms of puerperal fever); on the 28th, however, the patient who lay in the bed occupied twelve days previously by the fatal case, showed symptoms of being attacked with peritonitis of a low type; and on the next day the woman who lay in the adjoining bed was similarly affected; both died, the former on the 4th, and the latter on the 5th August. None of the patients in the large ward adjoining were attacked, nor any of those in the other parts of the house. It is remarkable that the first of these patients who was attacked occupied the bed in which the woman that died a fortnight previously had lain, and that the infection originating with her was propagated to her neighbour, though in the interval all the bedding had been washed and aired. I think, therefore, that these two instances, in some degree, confirm the opinion of those who look on puerperal fever, in all its forms, as propagated by infection; and this is further established by the fact, that after these two cases had terminated fatally, the ward being closed, no other case appeared during the remainder of the time that I resided in the hospital, viz: till the beginning of October last. On the other hand, it is remarkable that the first and second cases occurred in very distant parts of the hospital, which fact is opposed to the usual ideas we would hold of infectious contamination. In all these cases the stimulating plan of treatment was that which was adopted.—*Dublin Quarterly Journ.*, Aug. 1855.

48. *Action of Digitalis on the Uterus.*—Mr. W. H. Dickenson read before the Royal Medical and Chirurgical Society, Nov. 27th, a paper on this subject. He commenced by stating that, during the month of October, 1854, a patient in St. George's Hospital, labouring under most severe menorrhagia, was cured by the infusion of digitalis, exhibited for the relief of cardiac affection, from which she also suffered. In consequence of this, he had been induced to try the remedy, by the permission of Dr. Lee, in a series of cases of uterine hemorrhage which had occurred in the hospital. These cases, of which a table was given, were seventeen in number, and the general results of their treatment was as follows: In every case of uterine hemorrhage, unconnected with organic disease, requiring the employment of active remedies, admitted into the hospital after October, 1854, the administration of digitalis was had recourse to as the sole treatment, and the discharge was invariably arrested by it. The time which elapsed before the hemorrhage subsided varied with the dose in which the digitalis was exhibited. When large doses were given, as an ounce to an ounce and a half of the infusion, the discharge never appeared after the second day; when smaller doses, it never continued beyond the fourth day. In uterine hemorrhage connected with organic disease, the remedy acted with less certainty; its exhibition was required for a longer time, and the effect was sometimes transient. The author then spoke of the mode in which the digitalis operated in controlling uterine hemorrhage; and, after concluding that its effect could not depend on the sedative influence of the drug in the heart and arteries, he showed, by various experiments and observations, that the arrest of the hemorrhage was due to the action of the digitalis on the ganglia of the uterus, by which the organ was stimulated and the muscular substance powerfully contracted.—*Lancet*, Dec. 8, 1855.

MEDICAL JURISPRUDENCE AND TOXICOLOGY.

49. *Albumen and Hydrated Magnesia as Antidotes in Poisoning with Corrosive Sublimate.*—L. Schrœder has performed a number of experiments on dogs and rabbits, with regard to the use of albumen and hydrated magnesia as antidotes in poisoning with corrosive sublimate, from which he arrives at the following results:—

1. Albumen is not to be depended on as an antidote. The albuminate which

is formed is soluble, not only in an excess of albumen, but also in such albuminous substances as may be present in the stomach and intestines, and is especially liable to be taken up by the acids with which it may there meet.

2. Albumen can only be useful when given so as to produce vomiting, or where vomiting is excited by tickling the throat.

3. Hydrated magnesia cannot be regarded as an antidote, as it forms from the corrosive sublimate an oxide of mercury, which is itself poisonous.—*B. and F. Med.-Chirurg. Rev.*, Oct. 1855, from *Deutsche Klinik*, 1854, and *Prager Vierteljahrschrift*, 1855.

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50. *Poisoning by German Sausages.*—Mr. W. H. Michael, of Swansea, relates the following case: On March 22d, 1855, Mr. Michael was desired to see a child living in Postern-lane, Swansea. Upon arriving at the house, he found a fine little boy, between four and five years of age, lying on his grandmother's lap. The mother had been given the evening previously a German sausage, of which the eldest son had partaken at once. This had made him ill through the night; vomiting and purging had taken place to a considerable extent. The little boy now ill had eaten some of the sausage (according to the statement of the mother, only one or two very thin slices) for breakfast, about two or three hours before Mr. Michael arrived, at two o'clock P. M. Shortly afterwards he had vomited. About half an hour before he was seen, convulsions had come on; he had also been violently purged. When seen, the general surface was cold; the limbs rigid; the teeth very firmly clenched; the pupils largely dilated, and insensible to stimulus; and he had occasional convulsive spasm of the lips. The lips were livid; the face was deadly pale; no pulse could be felt at the wrist; and the respirations were only three in the minute. He died in about ten or fifteen minutes, and about three hours after eating the sausage, as nearly as could be learned from the confused statements of the mother.

The remaining portion of the sausage, which was one of the German smoked and dried kind, showed some incipient softening and decomposition (not putrefactive) at the surface; the interior both looked and smelled good. Careful analysis detected no traces of metallic poison. The mouldiness frequently spoken of by authors could not be seen.

The *post-mortem* examination showed the stomach half full of pieces of sausage, floating in a pulpy mass, half digested, of the same. Considerable irritation and mammillation of the mucous coat existed, especially towards the pyloric orifice. The mucous coat of the small intestines was irritated throughout, small puncta of blood being observable over the surface, which was bathed in increased mucous secretion. The brain was congested, as were also the thoracic organs. The other portions of the body (which, although well formed, was much attenuated) were healthy.

In Germany such cases are fearfully prevalent. In Wurtemberg alone, according to official returns, more than four hundred cases have occurred in the past fifty years, of which a hundred and fifty died. Of these, forty per cent. occurred in the month of April; and this has been put down as a matter of some importance in determining the character of the poison, which is said usually to manifest its symptoms in from twenty-four to forty-eight hours after ingestion. Recent researches appear to have proved, contrary to what has long been supposed, that unprepared meats, far advanced in the putrefactive process, or belonging to diseased animals, may be often eaten with impunity. Mr. Michael inclines to the doctrine lately put forth by M. Van der Court, that the poison of sausages may be due to the development of an elementary vegetable—the *sarcina botulina.*—*Ibid.*, *Assoc. Med. Journ.*, Aug. 17, 1855.

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51. *Poisonous Nature of Tobacco packed in Leaden Cases.*—The *Union Medicale* for September, 1854, contains some remarks on this subject. The moisture contained in the tobacco oxidizes the lead, and forms a soluble salt. The tobacco becomes covered with a layer of acetate, carbonate, chloride, and sulphate of lead, amounting to from six to thirty grains in half a pound. Tinfoil has, therefore, in France, been ordered to be used instead of lead. The pre-

sence of lead in tobacco is detected by burning the tobacco, treating the ash with dilute hydrochloric acid, evaporating, and treating the re-dissolved residuum with iodide of potassium, sulphate of soda, and sulphuretted hydrogen.—*B. & F. Med.-Chirurg. Rev.*, Oct. 1855.

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52. *Medico-Legal Importance of Cicatrices.* By Schneider.—The appearance of cicatrices is important in medical jurisprudence, inasmuch as it depends on the nature of the injury received, and on the sort of instrument by which it was inflicted.

Cicatrices after incised wounds, when these have been properly treated and there has been no deep-seated suppuration, generally present a more or less rectilinear form. But the elasticity and stretching of the skin, the convexity of the subjacent parts, and the softness of the cellular tissue, may change a rectilinear cicatrix into an elliptic, or even into a circular one. *Cicatrices from stabbing instruments* are often of a triangular form. Those from *gunshot wounds* are generally of a rounded or grooved character. If the shot has been received from some distance, there is a considerable mark (*scheibe*) with depression of the skin in the centre, and puckering at the margins; if the shot has been fired close at hand, the cicatrix is deeper, its edges are irregular, and it is of a bluish colour. In wounds of this description, also, the point of entrance of the ball is shown by a depressed, and the point of its exit by an elevated cicatrix. *Bruises*, when unattended with lesion of the integuments, leave no cicatrix; but when occurring with this complication, they leave cicatrices resembling those caused by incised wounds, or injuries accompanied with loss of substance. *Bites of mad animals* are distinguished by no peculiarity of scar. *Burns* of the first, or minor grade, leave no mark; those of the second grade occasion scars like those of blisters; those of the third grade cause white, glistening, and tolerably smooth cicatrices; and those of the fourth, or most severe grade, leave dense, hard, irregular, contracted cicatrices, with abnormal union of approximated surfaces, and very great retraction of the cellular tissue. *Fluid cauterants* give rise to superficial, and *solid cauterants* to deep circumscribed cicatrices, with contracted centres, and these may in certain cases be variously coloured by the chemical nature of the irritant substance. *Scrofulous ulcers* leave cicatrices which are irregular and furrowed, with smooth deep depressions, and surrounded by hard uneven margins. The *scorbutic cicatrix* is dark bluish-red in colour, soft to the touch, somewhat elevated, and rather painful; in course of time it becomes flatter, of a reddish-brown colour, approaching to green in the centre, and very thin and easily injured. *Arthritic scars* are of a reddish-brown, a bluish, or an ash-gray colour; they are studded with elevations and depressions; while their circumferences are dark brown, varicose, and often inflamed and erysipelatous. *Herpetic cicatrices* are wider spread, irregular, superficial, and of a dirty reddish-brown colour; in the centre they are often of the same colour as the old skin, and they gradually merge into the surrounding integuments. *Syphilitic cicatrices* are characterized by great loss of substance; they approximate the lips of the deep ulcers before their granulations have had time to reach the surface. *Glandular cicatrices* are irregularly tumefied; generally deep, hardened, and of a reddish-brown colour. The cicatrices of *true smallpox* are flat and irregular, with indented margins, giving to the surface the appearance of a citron; while those of *pseudo-variola* have smooth even borders, and have hairs growing in them.

As regards the *age of a cicatrix*, we must be guided by its colour, size, and thickness, in forming our opinion. The fainter its colour, the larger its extent, and the greater its sensibility and tenderness, the more recent is its formation, and the more imperfect is its organization. As its age increases it grows smaller, thicker, more shining, and less sensitive.—*Monthly Journ. Med. Sci.*, Oct. 1854, from *Prag. Viertaljahrs.* Bd. ii. 1854.

AMERICAN INTELLIGENCE.

ORIGINAL COMMUNICATIONS.

Delirium Tremens; Fatty condition of the Heart; Free Oil in the Blood. By D. MACGIBBON, M. D., Visiting Physician to the Charity Hospital, New Orleans.—Ann McGinnes, aged 35, entered the Charity Hospital, New Orleans, June 12, 1854, suffering chiefly from gastritis, with vomiting, the consequence of recent too free indulgence in alcoholic liquors. She was stout and healthy-looking in her general appearance. There was not much nervous irritation apparent on entrance. The gastritis and vomiting were soon subdued, and she seemed otherwise to be doing well enough, till the evening of the 16th, when delirium tremens set in, and with considerable violence. She neither slept nor permitted any one else in the ward to sleep that night. The following morning I found her in the same state of high excitement, and strapped down in bed. She had some notion that those around her contemplated murdering her, and that her son, who she imagined had already murdered her mother-in-law, was about to kill her also. The straps I had removed, and by a little soothing got her induced to try the inhalation of chloroform. Prior, however, to proceeding to this the condition of the heart was examined. The pulse was regular and of the usual celerity in health, but was not strong. The first and second sounds were normal.

The chloroform acted beneficially. She was shortly in a sound sleep, which was kept up about two hours by the occasional use of the anæsthetic; after which the ordinary medicines were resorted to, to keep her quiet. She had no more delirium, took some nourishment, and was apparently doing well till the afternoon of the 16th, when she expired somewhat suddenly, and, certainly to me, somewhat unexpectedly. The nurse observed her commence to breathe hard shortly preceding this, and further examination showed her to be in a comatose condition. She also noticed that the face became paler as dissolution approached.

Post-mortem 18 hours after death. An incision made along the chest and abdomen showed an unusual depth of adipose tissue. This was of a yellowish colour, and of normal consistency. From appearances the subcellular tissue of the whole body might be inferred to partake of like characters as those exhibited.

On raising the sternum, a good deal of fat was seen under it and about the outer edges of the pericardium. This latter was closely applied to the heart, and, when opened, that organ was found to be much enlarged, seemingly dilated with fluid. A small portion of a dirty-red fluid was in the pericardium—most probably from transudation—which stained the aorta and the other large vessels of the heart of its own colour. The heart, with this exception, was of a greenish-yellow colour, and its walls were very flaccid. The "auricular appendage" of the right side crepitated distinctly when pressed between the fingers. On cutting into the heart, fatty degeneration, to an extraordinary degree, was found to have taken place. The internal meshes were the only portions that, to appearance, retained their muscular character. The whole was exceedingly friable, being easily broken down by the fingers.

A large quantity of dark and but slightly coagulated blood, *together with a portion of gas*, occupied all the cavities of the heart. This latter was made to bubble up, from one of the severed vessels, through the blood in the chest, in a way that put its presence beyond all doubt. A still further remarkable feature observed was the presence of *free oil in the blood*, which floated about, in globules of different sizes, in abundance, and under the action of sunlight presented the varied tints of the rainbow. A portion of blood pressed out from the interior of the heart, where it had no opportunity of receiving any admixture of oil, that had exuded from the severed integuments, and received into a clean phial, exhibited the fat-globules in the same way. The interior of the heart was of a dark colour, from having imbibed the blood in contact with it; and both the serous covering of the aorta and its fibrous tissue were of a deep purple colour from the same cause.

The hydrostatic test showed the sigmoid valves of the aorta, and those of the pulmonary artery, to be in a normal condition, as were also all the other valves of the heart.

The lungs looked healthy. The liver was of the ordinary size; it had a pale yellow colour, and was exceedingly friable; globules of oil exuded in great abundance from the cut or torn surfaces. The mesentery and omentum were loaded with adeps, and around both kidneys were masses of the same. The kidneys themselves were pale, soft, and flabby, and their texture was very easily broken up. Oil was observed to exude here the same as in the liver, but whether it accumulated in the tissues of these organs, or that they also had undergone fatty degeneration, was not ascertained. Both kidneys, when cut into, showed the presence of "Bright's disease" in a form sufficiently marked. A portion of air was seen collected under the serous covering of the left kidney, at its convex edge.

The brain was examined. No indication of congestion was observed. It seemed harder than normal. A small portion of blood left in the concave portion of the occipital bone, when the brain was removed, had a fatty globule floating on it.

The only other point observed, worthy of notice, was that the subcellular tissue of the abdomen had greatly invaded the substance of the muscular walls of the abdomen, which was thin and easily torn by the fingers. The colour, however, was normal, and contrasted strongly with that found in the heart of the subject.

The reaction of ether on the blood showed the oil-like substance to be in reality oil. The fatty globules coalesced so readily that they gave the idea of a rather scanty supply of protein in the blood, from which to form envelopes. This may have arisen from the decomposition which occurred since death. The blood, when examined by the microscope, was found to be already greatly decomposed. It presented not a single blood-corpuscle beneath the microscope. The whole was converted into a disorganized granular fluid, without a trace remaining by which to detect its true character.

A specimen of the wall of a ventricle, viewed in the same way, showed, in close contact, strings of elongated fatty beads, running in all directions in the investing nidus; but no trace whatever of muscular fibre could be made out. Even a portion taken from the apex of the columna papillara had no trace of muscular fibre visible when seen by the microscope. It seemed to have degenerated into a fibroid tissue, with streaks of oil drops here and there throughout it.

Professor Riddell, who examined at the time the above pathological specimens of blood and muscular tissue, stated that he had had no previous opportunity of observing with the microscope such evidences of degeneration and disintegration as were exhibited by these.

There is little doubt but that the air observed in the heart and elsewhere in this case was *post-mortem*—the result of decomposition. The temperature was at the period as high as 90° in the shade, and the atmosphere was surcharged with moisture; both circumstances which greatly favour decomposition. Besides, it has been observed by Rokitansky that, in this particular disease, the bodies pass quickly into decomposition (*Brit. and For. Med.-Chir. Rev.*, July, 1853). I have never met with such another case in the deadhouse here; and certainly some of our subjects who die of yellow fever, and other malignant complaints, undergo decomposition rapidly enough. It is customary, however, to make the *post-mortem* on these closer on the dissolution than was done in the above, as they require to be buried quickly.

A case presenting points of similarity with the one above recorded is noticed by Dr. Stokes in his recent work on *Diseases of the Heart and Aorta*, at page 309 (Am. ed.). Speaking of fatty degeneration of the heart, he says: "The next observer of this disease is Professor Smith, who has enriched our knowledge of the subject by his discovery of free oil in the blood, and by his observations on the production of air in the heart and veins after death." Evidently such cases have been but rarely witnessed, and, when they do occur, it is important to medical science that they be noticed.

Those who, like the above subject, indulge in the free use of alcoholic liquors, would seem to be, comparatively speaking, prone to fatty degeneration of the heart. Statistics furnished by those who have made this subject a point of study, would seem to prove this pretty clearly. For these, among others, I may refer to the numbers of the *British and Foreign Medico-Chirurgical Review* for July, 1853, and May, 1854. The chief causes assigned are the large portions of carbonaceous matter taken into the system, the injurious action of the alcohol on nutrition, and the enervating effect of the same on the system at large. But that some predisposition, which this unfortunate habit favours, must exist in order to produce this peculiar degeneration, is also very certain.

Convulsion with Hemiplegia in Child, which ceased on the ejection of a pin from the stomach. By T. S. Hopkins, M. D., of Waynesville, Georgia.

The following history of a case which recently occurred in my practice, may not be devoid of interest to the profession. A short time since I was called in haste to the child of Mr. J. C., aged two years, who was in convulsions. I reached the house at midnight, and received the following account of the case from the mother: Up to 10 o'clock A. M., the child was quite well; from this time it became fretful, and, as the day advanced, screamed frequently, as though suffering acute pain. All efforts to quiet it were unavailing, and about 4 P. M. it was seized with violent convulsions, and had four by sunset. The child had enjoyed excellent health from birth to the present time; had never been sick before. The convulsions had ceased before my arrival, and did not return. There were frequent efforts to vomit, during which was occasionally brought up a small quantity of thick glairy matter. These efforts to vomit were generally preceded by a loud cry indicative of severe suffering. The pulse, with the exception of a slight intermission, was in all respects natural. No symptom whatever existed indicative of cerebral lesion. The child was perfectly conscious, and endeavoured to seize my watch as often as I presented it. Notwithstanding the absence of every symptom of that pathological condition upon which we would have supposed such a state of things to exist, there was perfect hemiplegia of the right side. The right arm and leg, allowed to fall from the lap of the mother, hung as motionless and helpless as though the appendages of a lifeless body.

Friction, counter-irritation, the warm bath, &c were assiduously used; a dose of calomel was administered, followed at daylight by a dose of castor-oil, which was immediately ejected from the stomach, bringing with it a *pin*, one inch and an eighth long, when the hemiplegia disappeared; and by 10 o'clock the child was playing about the house, apparently, and as time has proven, really as well as ever. The existence of the foreign body in the stomach is a sufficient explanation of the convulsions, but that the convulsions should be speedily followed by hemiplegia (the mental faculties remaining intact), and this vanish almost in a moment after the ejection of the foreign body from the stomach, leaving no trace of its existence, is what I acknowledge my inability to explain.

Nov. 25, 1855.

On Dr. Zeigler's new Pessary. By Biddle Arthur, M. D., Physician to the Pittsburg Infirmary.—In the number of this journal for October last there is a description of a new pessary by George J. Zeigler, M. D. It is not my desire or intention to endeavour to deprive that gentleman of any of the credit for the contrivance of that instrument, but to strengthen and confirm his statement in regard to its value.

In November, 1854, a case of prolapsus uteri, accompanied with leucorrhœa, came under my care; and, having tried a variety of pessaries with very little satisfaction, and not being able to obtain any of Dr. Hodge's pessaries in our city, the idea struck me that I could make Dr. Hodge's horseshoe pessary out of iron or steel wire, with a covering of gutta percha. I made one and applied it. It did not fit exactly at first; but, by a slight alteration, with very little trouble, it answered most admirably. The uterus was replaced in its natural position by it, and, after it had been properly adapted, the leucorrhœa, which had entirely substituted the menstrual secretion for almost a year, was soon checked, and the patient has been menstruating regularly for the last six months. When she had been wearing the instrument about six weeks, after the discharge had ceased, I removed it; but it had not been taken away long before the womb was again prolapsed, and the discharge returned. I replaced the instrument, and the discharge again ceased. She has enjoyed good health ever since, and still wears the pessary. I would also state that, during the treatment, she used injections of solution of sulphate of zinc, nitrate of silver, and cold water into the vagina and womb, and also tonics internally. She had been treated before she came under my care by tonics internally and injections into the vagina, but not into the womb, with little or no benefit.

Another case came under my care soon after the one above related. The prolapsus uteri followed parturition, and was accompanied with much nervous irritability, but no leucorrhœa. I made one of these instruments to suit the case, after applying and remodelling it several times; for it is hardly possible for any one to make an instrument to fit the parts exactly without a measure of some kind; and there is no way that I know of to get that measure but by making an instrument, first, from what we know of the general shape and dimensions of the vagina, and applying it, and then to alter it to suit. The nervous irritability in this case was not long in disappearing, and she soon became pregnant. Five months after she became pregnant I removed the pessary. The pessary had not been removed for more than six months before this time; and, when it was taken away, it was found to be perfectly sound, and just as it was when placed there, except it had a very thin whitish coat on it, which was caused by the secretions.

I might mention other cases that have been under my care, where the patients have been equally benefited by this instrument, but I do not think it is necessary.

I have shown this instrument to several of the physicians of this city, and all who have used it have reported very much in its favour.

A few words in regard to the construction, application, and value of this instrument before concluding. In the construction of it, I have generally used the common iron wire, or, what I think much better, the square iron wire which supports the ribs of an umbrella, if it is not too heavy. It should only be heavy and thick enough to retain its shape whilst it is being covered; for, after the wire is covered with the gutta percha, and it has cooled down to ninety-eight degrees, the temperature of the body, the instrument is then sufficiently strong to answer every purpose. If the impure gutta percha is used for covering, it should be well freed from the fragments of vegetable and earthy matters by kneading in hot water. When raised to 160°, either by hot water or by dry heat, it becomes very plastic, soft, and capable of being welded and moulded into any form. On cooling down to the temperature of the body it becomes stiff, and retains the form which may have been given it. The covering should be a line or more in thickness; for, if it is too thin, it sometimes breaks and peels off.

The general form of the instrument which I have found to answer best is that of Dr. Hodge's horseshoe pessary. But one of the great advantages of these materials is that they can be made into whatever shape the case may require with great facility. The length should be from two to three inches, and so curved longitudinally as to suit the curve of the vaginal canal. It should be curved enough to throw the feet of the instrument up behind the rami of the pubis. The prongs should stand from one to one and a half inches apart. The uterine extremity need not be so wide, but it is better to be a little convexed on the upper surface, and also a little concave on the anterior surface, so that it may be better adapted to the neck of the uterus.

This instrument is very easily applied by lubricating the parts well, and by pressing back the posterior commissure with one finger and introducing the pessary with one edge resting on that finger and the other towards the symphysis pubis. And when it has entered the orifice of the vagina, direct it so that it will turn over with its concave surface upwards, and its uterine extremity behind the neck of the uterus. The feet will then rest up behind the rami of the pubes, if the pessary is sufficiently curved longitudinally. After it is introduced, if properly adapted and of the right size, it should not produce any pain. The removal of this pessary is generally very easily accomplished, either by the fingers, or by taking hold of one prong with a pair of dressing forceps in one hand, and by depressing back the perineum with a finger of the other hand resting upon the posterior commissure, and by withdrawing it in the same course in which it was introduced; that is, the prong to which you are holding with the forceps should be turned to and pass out over the finger that rests on the posterior commissure, and the other prong coming out under the symphysis pubis.

The value of this instrument, as has been stated by Dr. Zeigler, depends upon its simplicity, cheapness, lightness, facility and accuracy of its construction, by the physician himself, to suit his own cases, with the loss of less time than it would take to give a description of the form and size of some metallic pessary to an instrument-maker and have him make it. It does not interfere with the functions of the pelvic viscera, nor does it obstruct the use of injections, which are necessary for keeping the pessary and vagina clean. I have used the gutta percha pessaries for almost a year, and have let them remain applied for more than six months, and, when removed, I have found the gutta percha smooth, sound, and to all appearances unacted upon either by the secretions or injections.

Pittsburg, *Dec.* 4, 1855.

DOMESTIC SUMMARY.

Placenta Prævia.—Dr. Storer observed (at a meeting of the Boston Society for Medical Improvement, June 11th) that, since the last meeting he had, in consultation, seen a case of *placenta prævia,* to which he would refer, in order to learn the experience of the gentlemen present, in similar cases.

The woman was in labour with her third child. Attacked with hemorrhage, her family physician was sent for. On arriving, he found the os uteri quite rigid, and but little dilated—but was able to pass his finger sufficiently far to distinguish the placenta situated over it. The patient having become much exhausted by the bleeding, Dr. S. was sent for. Upon examining *per vaginam,* the os was ascertained to be so slightly dilated, as scarcely to admit his finger. The prostrated condition of the woman seemed to demand that the hemorrhage should be checked as soon as possible; that her life should be saved at the risk of that of the child. Accordingly, with much effort, Dr. S. introduced his finger, and completely separated the placenta from its attachment. The hemorrhage, which had been constant and profuse, ceased at once. All anxiety was removed. Ether was exhibited, and in about twenty minutes after the delivery of the placenta, the os was sufficiently dilated to enable the attending physician, not however without some difficulty, to turn and deliver.

[At a subsequent meeting (Oct. 22d), Dr. Storer reported another case of *placenta prævia,* and Dr. Coale related one of partial implantation of the placenta over the *os uteri.* These latter reports being made nearly at the time of printing that just given, allows of their being combined with advantage. This will account for the discrepancy of the dates.—Secretary.]

October 22. *Case of Placenta Prævia, &c.*—Dr. Storer, referring to the above case, remarked that he had seen another case of *placenta prævia* since the last meeting. It occurred in the practice of a very intelligent physician in a neighbouring town. As this gentleman, who had attended two thousand women in labour, had never had the misfortune to meet with a similar case, he requested the assistance of Dr. S. The patient, aged 36 years, pregnant with her eighth child, was attacked with hemorrhage from the vagina on the 15th inst. Her physician being called, found a slight dilatation of the os uteri, and diagnosticated a presentation of the placenta. He immediately plugged the vagina, and waited for uterine contractions to appear. On the morning of the 17th, Dr. S. saw her. She had lost from two to three quarts of blood since the commencement of her attack—was still flowing, although this was partially checked by the plug. Upon examination *per vaginam,* the placenta was found situated directly over the centre of the os uteri. Its central portion had become detached throughout a considerable extent by the blood retained between it and the plug; a hand was passed up by its side without much difficulty, and its lateral attachment destroyed. The feet of the child being found, it was delivered alive, and both it and the mother were left comfortable.

22d. *Partial Implantation of the Placenta over the Os Uteri.*—Dr. Coale was called to a *primipara,* aged 24, on Tuesday, Oct. 9th, at 1 A. M.; eighteen hours before, she had been suddenly seized with a flow of blood to the amount of half a pint, but it ceased and left no bad effects. Dr. C. was called on account of a repetition of the hemorrhage, but this time to the amount of full half an ordinary chamber-pot. It was attended by only one pain, and that not severe, and all of it came pretty much at one gush. Dr. C. made an examination with great care, and found the *os uteri* not dilated, but that some substance protruded from it. The patient had not expected to be confined until the end of the month, her last menstrual period having occurred Feb. 16th.

A strong opiate was administered, and she was left with the injunction to be perfectly quiet, and to send word immediately upon any recurrence of the hemorrhage. A visit was paid at noon, and another the next day, without any further developments. On Friday, 12th, at 4 P. M., Dr. C. was sent for, and found that pains had occurred a half hour before; not severe, and without much hemorrhage. Examination detected the os, of the size of the bottom of a tumbler, and, within it, the loose detached edge of the placenta—free to the extent of one and a half to two inches; evidently previously situated over the os. Nothing indicating immediate danger, the descent of the child's head, which was presenting, was hopefully waited for. This soon took place, compressing the loose edge of the placenta, and of course the adjacent surface of the uterus, and the hemorrhage ceased, except a very trifling amount—the labour proceeded favourably, and at 6 P. M., delivery took place, the child being healthy, and weighing eight pounds.—*Boston Medical and Surgical Journal*, Nov. 1, 1855.

Deep wound of the Parotid Region, in which a Ligature was simultaneously applied to the Common and Internal Carotid Arteries.—Dr. GURDON BUCK records (*New York Medical Times*, Nov. 1855), the following interesting example of this:—

"Wm. Graw, aged 30, was admitted into the New York Hospital, July 5, 1848, with a deep wound in the right parotid region, caused the day before by the explosion of a glass bottle containing gunpowder. The hemorrhage, which was profuse, was arrested with much difficulty by sewing up tightly the external wound, after first extracting a fragment of glass one inch in length. The upper part of the neck and cheek, surrounding the wound, were a good deal swollen and tense. The wound itself was scarcely half an inch in length, and was situated half an inch anterior to the lobe of the ear. After enlarging its orifice, the finger passed directly inwards behind the ramus of the jaw, a depth of nearly two inches, and could be moved about with some freedom at the bottom of the wound. No hemorrhage followed the exploration. The patient's mouth was drawn towards the left side, and much distorted. Deglutition was difficult, and his voice, hitherto distinct, was thick and not easily understood. Patient was directed to keep in bed, and to have cold water dressings applied to the part.

"*July* 8. On careful examination, the swelling, which had increased, presented a distinct pulsation at its central and most prominent part, showing conclusively the development of a false aneurism.

"*9th.* At 4 A. M., a very profuse hemorrhage occurred, which could not be controlled by pressure over the wound, but was finally arrested by very firm compression applied to the common carotid. After being kept up by the Resident Surgeon and his assistants for nearly two hours, compression with sponge in the wound was substituted, and applied in the following manner: Three pieces of compressed sponge were successively passed down into the cavity of the wound, and a fourth placed over the orifice. Two graduated compresses were applied over the sponges, and the whole maintained in place by the finger of an assistant. The patient was thus relieved of the painful pressure over the neck, and time was allowed to convene the surgeons for an operation.

"*Operation* at 9 A. M. For reasons that will be stated hereafter, it was decided to apply a ligature to the internal as well as the common carotid artery. The procedure was as follows:—

"An incision three inches in length was made from a point a little above the ramus of the os hyoides downwards over the edge of the sterno-mastoid muscle. This muscle being laid bare, its anterior edge was raised from its sheath and drawn outwards. A transverse venous branch that crossed the carotid at the point where it was to be tied, was secured by two fine ligatures and cut between them. The sheath of the common carotid was next opened; and a ligature passed beneath the artery, but not tied. The dissection was now carefully prosecuted upwards to the bifurcation, and the internal carotid exposed to the extent of three-fourths of an inch from its origin. In the first attempt to pass the armed needle under the artery, the patient became suddenly convulsed, his breathing stertorous, and his pulse feeble. evidently from disturbance of the pneumogastric nerve. Further proceedings were suspended to allow these alarming symptoms to subside, which required five or six minutes. A second attempt to pass the ligature was then successful without any accident. Before tying the knot, a careful examination was made to ascertain that nothing was included in the ligature but the artery. The effect of cutting off the current of blood from the brain was also tested, by tightening the thread over the finger placed in the noose with the artery. The ligature was then tied in the usual manner, and that around the common carotid was also secured an inch below its bifurcation and above the omo-hyoid muscle. The external wound was closed with sutures, and between them strips of muslin wet with collodion were applied. Ice-water dressings were directed.

"*July* 11. Patient is progressing favourably, his pulse is one hundred, full and strong. The swelling of the parotid region has diminished. Pus mixed with blood is freely secreted from the original wound.

"14*th*. The swelling has still further subsided, and the suppuration from the original wound very much diminished.

"20*th*. The ligature has come away from the internal carotid. No pulsation is perceptible either in the facial or temporal arteries of the right side.

"21*st*. The ligature came away from the common carotid.

"*Aug*. 5. Patient has complained for the last four or five days of severe pain over the right side of the head and face, anterior to the ear, and has had frequent slight hemorrhage from both nostrils. The wounds have nearly healed. No excitement of pulse. Ordered cups and scarifications to the temples.

"12*th*. Since the last report, blisters have been applied behind both ears, and with decided relief of the pain in the head. The epistaxis has recurred but once, and only in a slight degree. His bowels are constipated.

"14*th*. The pain in the head has returned this morning with great severity. Constipation still persists, in spite of active purgatives. Ordered a blister to be established on the forehead with aq. ammon. fort.; and croton oil, gutt. ij. to be taken, and followed by enema, if necessary.

"15*th*. The head is much relieved. The bowels have been freely evacuated. The blister to be continued behind the ear.

"26*th*. The patient's general condition is improving; his bowels, however, still continue obstinately constipated, and require the most active purgatives to move them. The wounds have not yet entirely healed; that in the parotid region is converted into a fistula, from which saliva flows freely especially during the act of mastication. The mouth, when opened, is still drawn to the left side; the right half of the tongue has become atrophied and flabby, presenting longitudinal wrinkles on its surface. Its appearance strangely contrasts with that of the left half, which retains its natural plump and healthy condition.

"*Sept*. 21. Everything continued to progress favourably till this morning, when patient became feverish, and sick at his stomach. During an effort to vomit, he was suddenly startled by a gush of arterial blood from the wound in the neck, amounting to about two ounces. Before assistance could reach him, the hemorrhage ceased spontaneously.

"*Oct*. 18. No return of hemorrhage. The salivary fistula noticed above has closed under the influence of pressure applied with the end of the finger to the orifice of the fistula during meals. Patient was discharged cured this day.

"Several months afterwards, when he presented himself for examination, the right half of the tongue was still found atrophied and shrivelled, though the function of taste remained unimpaired. The mouth was drawn to the left side, distorting the face. His articulation continued thick and indistinct.

"*Remarks.*—The situation and depth of the wound in the above case, as well as the profuseness of the hemorrhage and the extreme difficulty of controlling it by pressure, plainly indicated that a large artery had been divided. The external carotid artery and certain of its branches, as well as the internal carotid, lay close together in the region occupied by the track of the wound, and it was impossible to say which of them might be involved.

"In the choice of means for arresting permanently the hemorrhage, the following considerations were carefully weighed:—

"1st. In reference to securing the divided vessels in the wound. This undoubtedly would have been the most reliable method, and is the one prescribed by the rules of surgical practice. It is not, however, always admissible. Obstacles may exist, depending on the inaccessible location of the wounded vessel, or other equally insurmountable difficulties. In this case, the wounded vessels lay deep in a narrow space bounded anteriorly by the ramus of the lower jaw, and posteriorly by the mastoid process and the sterno-mastoid muscle, which presented unyielding barriers that forbade any distension of the edges of the wound, even had it been admissible to enlarge it by incision. The exposure of other larger vessels to be wounded in attempting this operation, and the extreme difficulty of controlling the hemorrhage by compression of the common carotid during the operation; these were all weighty reasons, that deterred from resorting to this method.

"2d. Ligature of the common carotid. This is the resource heretofore most generally relied upon in wounds of the neck, when tying the wounded vessels has been inadmissible. Though it has succeeded in many cases, yet it has not unfrequently proved ineffectual, and that oftener, no doubt, than the records of surgery disclose. The free communication between the internal carotids of either side through the circle of Willis, permits a return current to be promptly established through the internal into the external carotid and its branches of the same side, after the ligature of the common trunk. This was illustrated in the writer's own experience a few years ago, in a case of self-inflicted wound of the throat, exposing the left thyroid cartilage. A profuse secondary hemorrhage occurred at the expiration of five or six days, for which the common carotid artery was tied. One hour had scarcely elapsed before the hemorrhage recurred almost as profusely as at first. Compression kept up by means of a succession of assistants was relied on for three or four days longer, when a third repetition of the hemorrhage rendered it necessary to resort to other means. The original wound was now enlarged and explored, and after much difficulty, the bleeding vessel was secured. It was found that a small false aneurism had developed itself at the bottom of the wound around the divided vessel. Another consideration that dissuaded from the operation of tying the common carotid artery alone in this case, was the fear entertained that the internal carotid might itself be wounded.

"The novel operation which was resorted to in this instance, and which was so successful, was thought to be adapted to any contingency that might exist. By cutting off simultaneously the direct current through the common carotid and the return current through the internal carotid, hemorrhage from a wounded branch of the external carotid would be effectually controlled; and in the event of a wound of the internal carotid, the circulation would be rendered stagnant in that vessel by the ligature applied to it near its origin, and the process for its permanent closure would be secured by the simultaneous ligature of the common carotid."

On the Use of Sulphate of Cinchonia, as a Substitute for the Sulphate of Quinia.—Dr. R. P. Thomas exhibited to the College of Physicians of Philadelphia (Oct. 3), some beautiful specimens of the three alkaloids, quinia, cinchonia, and quinidia, the active principles of the Peruvian bark, or cinchona of the Pharmacopœia; as also specimens of their respective sulphates.

The quinia was pulverulent, and of a pure white colour. The cinchonia had been prepared with great care, so as to secure its crystallization. The crystals assumed the form of four-sided prisms. The quinidia had been obtained with an equal degree of care, and was, in like manner, in the form of prismatic crystals. The sulphates exhibited the characteristic crystals peculiar to each.

After some brief remarks upon the appearance, solubilities, and chemical nature of the specimens, Dr. Thomas observed, that the importance of obtaining an efficient substitute for the invaluable quinia is daily becoming more apparent and more urgent.

Heretofore our supplies of the barks yielding this drug have been exclusively limited to, and derived from, the countries on the western coast of South America, and, more particularly, from Peru and Bolivia; the latter State furnishing the greater part of the true Calisaya, or yellow bark.

From time to time, monopolies for the exclusive cutting of the trees have been granted by the governments temporarily existing, to moneyed capitalists and companies, who could only realize a profit, after paying the exorbitant bonuses required, by an indiscriminate felling of all of the trees within reach, without reference to, and irrespective of any provision for future supply.

The bark of the root, which is probably very rich in the active principles, and that of the smaller branches, are rejected. The former, on account of the time and labour required for digging it up, and the latter, for the comparatively small yield of the alkaloids.

By this wasteful and destructive method, vast sections of country have already been stripped, without a full development of their resources. And, according to Dr. Weddell, who speaks from personal observation, the waste is as great at the present day as it has been at any former period.

Another reason for calling the attention of the Fellows to the importance of finding a substitute for quinia, is to be found in the fact that our national Pharmacopœia recognizes the barks from the western coast of South America, only, as officinal. And, on this ground, the drug inspectors of Philadelphia and other ports have actually refused admission to barks from the northern coast, even when they have contained a large percentage of alkaloids, other than quinia.

Of course, a new and inexhaustible supply of efficient barks will at once be opened to us from the latter regions, if experience shall prove that cinchonia and quinidia (which they yield so abundantly) approach quinia in virtues, even though it be but approximatively.

Foremost in the rank of efficient substitutes yet discovered, must, I think, be placed the sulphates of quinidia and cinchonia.

The former article is now being tried extensively, both in this country and abroad, as well in hospital as in private practice.

The latter article—the sulphate of cinchonia—was tried on a limited scale many years ago in the hospitals of Europe, but did not attract much attention. Again it is coming into vogue, and seems to promise results of a valuable character.

In the year 1852 it was introduced in the Pennsylvania Hospital with a success warranting more extensive trials, as shown by a valuable paper on the subject, published by Dr. Pepper, one of the physicians of that institution. In the two following years its use was continued by Drs. Pepper and Gerhard with similar success. The present season they are employing the sulphate of quinidia, the efficacy of which will doubtless soon be made known.

In *Ranking's Abstract* for June, 1855, is a statement that M. Hudellet, Physician to the Hospital at Bourg, had commenced the use of the sulphate of cinchonia in March, 1853, and, "since this time, quinine has been almost altogether supplanted. He gives from four to six grains of the sulphate of cinchonia in solution, adding to the first three or four doses from ten to twenty drops of laudanum, and the result is that, out of 507 cases of intermittents of all kinds, all were cured except nine. This mode of treatment did not cause any disorder, either in the stomach or the head. Relapses were neither more nor less common than after quinine; and the spleen was affected in the same way, and to the same degree, as by quinine."

To some, this statement may appear to be bordering on the extreme, but it shows at least that the article must be possessed of decided efficiency, or the experiment would not have been continued for a period of two years, and in more than five hundred cases.

To give the cinchonia a fair trial, a number of medical Friends, connected with various public charities here, united with me in prescribing it in all, or nearly all of the cases that presented, and in which quinia would otherwise have been given. The result has been very satisfactory.

In the Western Clinical Infirmary, the supply of quinia having become exhausted on the first of June last, the sulphate of cinchonia was exclusively introduced into the house by general consent of the medical officers. Consequently it has been used there as a tonic in ordinary cases, and as an anti-intermittent in the neuroses of a periodical character, as well as in the common intermittent and remittent fevers.

By the register, it appears that ten cases of remittent and one hundred and nine of intermittent fever have been under treatment. These were mostly of the mild type prevalent this fall, and, with a single exception, all recovered. The number of relapses has not exceeded that usually observed after the employment of quinia. In fact, the prescribing officers express much confidence in the anti-periodic properties of the cinchonia.

As to the mode of administration, no uniform rule is observed. One gives twelve grains in solution at a single dose, and directs two grains night and morning for four or five successive days, and particularly on the eighth, fifteenth, and twenty-first days. Another prescribes two grains every hour, on the morning of the expected chill, until ten grains are taken, and half of the quantity upon the intermediate days. A third prescribes it in the pilular form in combination with impure piperin, or, with the fluid extract of black pepper.

At the Philadelphia Hospital, it has been tried by some of the assistant physicians, with much benefit in a large number of cases of disease of malarious origin, but, as their particular history is not yet made out, I can only give this general statement.

At the Philadelphia Dispensary, a fair trial has been given it in all those walking cases of intermittent fever, capable of visiting the house during the intermission. These, amounting to one hundred and two in number, have been treated, and the results carefully observed by Dr. George Martin, who has kindly prepared the subjoined tables exhibiting the results. He remarks:—

"Our formula for administering the sulphate of cinchonia is the following:—℞.—Cinchoniæ sulphatis gr. xxxij; tincturæ ferri chloridi f℥ss; aquæ f℥iv. *S.*—Dose, one to three teaspoonfuls, *pro re nata.*

"The first column of quantity in the table gives the number of ounces of the above mixture required to check the chills, the second, the whole number taken. In most of the cases, when more than two ounces were required to check the disease, it was owing to the patient not having taken it according to the directions. We order two ounces of the above mixture, and direct the whole to be taken in divided doses before the anticipated paroxysm. We have not unfrequently given three drachms at a dose, always diluted with water, and have never known any irritation to follow its administration when the directions have been complied with. In many of the cases, the disease had been running on at intervals for weeks and months, and when the difficulties that have to be encountered by the patients' not returning at proper times for their medicine are taken into consideration, it will certainly appear that the treatment has been followed by as good results as any that could have been adopted.

"I should have stated that in many of the cases of relapse, the disease returned while the patients were at work in the country."

Table of 102 *Cases of Intermittent Fever treated at the Philadelphia Dispensary, by Dr. George Martin, with the Sulphate of Cinchonia.*

[Each fluidounce of the solution used contained rather less than eight grains of the sulphate of cinchonia, and one fluidrachm of the muriated tincture of iron.]

No.	Date. 1855.	Age.	Sex.	Type.	No. of fluidounces taken to check the chills.	Whole number of fluidounces taken.	Result.	Remarks.
1	March 8	26	Male	Tertian	2	2	Returned.	The chill in No. 1 returned June 1, when 8 fluidounces more were given. July 1, a second return; 4 fluidounces given. Since which there has been no return.
2	" 8	21	"	"	2	6	No return of chill.	
3	" 12	40	"	Quotidian	2	6	"	
4	" 13	40	"	....	2	6	"	
5	" 17	..	"	Tertian	2	4	"	
6	" 22	31	"	"	2	6	"	
7	" 24	19	Female	"	2	4	"	
8	" 26	45	"	"	2	2	Returned.	No. 8. Return of chill, April 2, when 6 fluidounces were given; without subsequent relapse.
9	" 27	34	Male	"	2	4	No return.	
10	" 30	22	"	"	2	4	"	
11	April 2	25	Female	"	2	6	Returned.	No. 11. Return, April 21, when 2 fluidounces were given; no subsequent return.
12	" 7	22	Male	Quotidian	2	2	No return.	
13	" 7	10	"	Tertian	2	2	"	
14	" 9	12	Female	....	2	6	"	
15	" 11	40	Male	Tertian	2	2	"	
16	" 12	15	"	"	2	4	"	
17	" 16	29	"	"	2	2	"	
18	" 19	35	"	"	2	2	Returned.	No. 18. Return, June 20, when 10 fluidounces were given; without subsequent relapse.
19	" 20	25	"	Quotidian	2	2	"	No. 19. Return, June 11, when 4 fluidounces were given; without relapse.
20	" "	25	"	Tertian	2	2	No return.	
21	" 23	67	Female	"	2	4	"	
22	" "	27	Male	"	2	2	"	
23	" 26	21	"	"	2	2	"	
24	May 1	23	"	"	2	4	Returned.	No. 24. Return, May 24, when 6 fluidounces were given; without relapse.
25	" 3	26	"	"	2	2	No return.	
26	" "	28	Female	"	2	4	"	
27	" 8	26	Male	"	2	4	Returned.	No. 27. Return, June 13; gave 16 grs. of cinchonia and 8 grs. of capsicum in pill; no return.
28	" 9	45	"	"	2	2	Unknown.	
29	" 9	60	"	"	2	6	Returned.	No. 29. Return, May 26, when 8 fluidounces were given; without further return.
30	" 12	37	"	Quotidian	2	4	"	No. 30. Return, June 1 and 23, 6 fluidounces were given; without any further return.
31	" 14	23	"	Quartan	2	4	No return.	
32	" 15	19	"	Tertian	2	6	Returned.	No. 32. Spleen very much enlarged. Return, June 6. 8 fluidounces were given; without relapse.
33	" 17	25	"	"	2	2	No return.	
34	" "	19	"	Quotidian	2	2	"	
35	" 19	17	"	Tertian	2	2	Unknown.	
36	" 21	48	"	Quotidian	2	4	Returned.	No. 36. Return, June 14, when 8 fluidounces were given; no relapse.
37	" "	37	"	Quotidian	2	2	Unknown.	
38	" "	24	Female	"	2	4	Returned.	No. 38. Return, June 4, when 4 fluidounces were given; no relapse.
39	" 22	21	Male	"	2	4	No return.	
40	" 23	25	Female	Tertian	2	2	"	
41	" "	42	"	"	2	4	"	
42	" "	44	Male	"	2	4	"	
43	" 28	19	"	"	2	4	"	
44	" 30	40	Female	"	2	2	Unknown.	
45	June 1	23	Male	Quotidian	2	2	"	
46	" 1	24	"	Tertian	2	8	Returned.	No. 46. Return, July 4, when 6 fluidounces were given; without subsequent relapse.

Table of Cases of Intermittent Fever—Continued.

No.	Date.	Age.	Sex.	Type.	No. of fluidounces taken to check the chills.	Whole number of fluidounces taken.	Result.	Remarks.
47	June 6	18	Male	Quotidian	2	2	Unknown.	
48	“ 21	27	“	“	2	2	Returned.	No. 48. Return, Aug. 19, when 4 fluidounces were given; no relapse.
49	“ “	38	“	Tertian	2	2	Unknown.	
50	“ 22	30	Female	“	2	2	Returned.	No. 50. Return, July 21, when 4 fluidounces were given; no relapse.
51	“ “	25	“	“	2	2	“	No. 51. Return, June 29, when 6 fluidounces were given; no subsequent relapse.
52	“ 25	27	“	Quartan	2	4	No return.	
53	“ 27	12	Male	Quotidian	2	8	“	No. 53. In this case, the disease has appeared every summer for eight years.
54	“ 30	13	Female	“	2	2	Unknown.	
55	“ “	40	Male	“	2	8	No return.	
56	July 7	55	“	Tertian	4	12	Returned.	No. 56. Disease of one year's duration. Return of chills, Sept. 13, when 4 fluidounces were given; no subsequent return.
57	“ 11	24	“	“	2	2	Unknown.	
58	“ “	19	“	Quotidian	2	2	No return.	
59	“ 12	40	“	Tertian	2	6	“	
60	“ 17	50	“	“	2	2	Returned.	No. 60. Return, Aug. 9, when 2 fluidounces were given; no further relapse.
61	“ 24	20	Female	Quartan	2	4	No return.	
62	“ 25	18	“	Tertian	2	2	Unknown.	
63	“ 29	18	“	“	2	2	Returned.	No. 63. Return, Aug. 15, when 4 fluidounces were given; no further relapse.
64	“ 31	32	“	“	2	2	Unknown.	
65	Aug. 9	37	Male	Quotidian	2	2	No return.	
66	“ 10	18	“	“	2	2	Unknown.	
67	“ 16	17	“	“	2	4	No return.	
68	“ 20	28	Female	“	2	4	“	
69	“ “	33	Male	“	4	8	Returned.	No. 69. Return, Sept, 13, when 4 fluidounces were given; no further relapse.
70	“ 22	29	“	“	6	4	No return.	
71	“ 23	26	“	Tertian	2	2	Unknown.	
72	“ 24	22	Female	“	2	2	“	
73	“ 25	26	“	“	2	4	No return.	
74	“ 27	21	“	“	2	10	“	
75	“ “	20	“	“	2	4	“	
76	“ 28	24	“	“	2	4	“	
77	“ 30	23	Male	“	4	4	“	
78	“ “	21	“	Quotidian	2	4	“	
79	“ 31	40	Female	Tertian	2	4	“	
80	Sept. 1	40	Male	Quotidian	2	6	“	
81	“ “	59	“	Tertian	2	10	“	
82	“ 3	35	“	Quartan	2	2	Unknown.	
83	“ 10	30	“	Tertian	2	4	No return.	
84	“ 11	25	“	Quotidian	2	4	Returned.	No. 84. Return, Sep. 14, when 8 fluidounces were given; no relapse.
85	“ 11	16	Female	“	2	2	Unknown.	
86	“ 12	19	Male	“	2	2	“	
87	“ “	30	Female	“	2	2	“	
88	“ “	18	“	Quartan	4	4	Returned.	No. 88. Return, Oct. 8, when 6 fluidounces were given; no relapse.
89	“ 15	43	Male	Tertian	2	2	Unknown.	
90	“ “	39	“	Quotidian	2	6	No return.	
91	“ “	41	“	“	2	2	Unknown.	
92	“ 18	23	“	“	2	2	“	
93	“ 21	20	“	“	4	4	Returned.	No. 93. Return, Oct. 8, when 6 fluidounces were given; no relapse.
94	“ 22	19	“	“	2	2	Unknown.	
95	“ 24	19	Female	Tertian	2	4	No return.	
96	“ “	30	“	Quotidian	2	2	Unknown.	
97	“ “	25	Male	Tertian	2	2	“	
98	“ 25	17	Female	“	2	2	“	
99	“ 26	25	Male	Quotidian	2	4	No return.	
100	“ 27	20	Female	“	2	4	“	
101	“ 28	11	Male	“	2	2	“	
102	“ “	34	“	“	2	4	“	

The value of all statistics depends entirely upon the ability and truthfulness of the observer. And the foregoing tables exhibit internal evidence of the care and observation of Dr. Martin, and of his perseverance in treating a series of cases running over a period of seven months with a single combination, and given always in a similar form.

It will be observed that the whole number of cases amounts to one hundred and two. Of these, fifty-four were absolutely cured, having no return of the chill. Twenty-five are reported as unknown, which means that the patients, after the final prescription, were lost sight of. Doubtless they, also, were all cured, or they would have returned for further treatment. A less careful observer than Dr. Martin would have had no hesitation in reporting them as cured. In twenty three the chill recurred. In one, at the end of three days; two, at seven days; four, at about two weeks; nine, at about three weeks; two, at one month; four, at two months; and one, at three months.

When it is borne in mind that dispensary patients belong to the labouring classes, who must return to their daily avocations as soon as they suppose the chills are checked, and thus expose themselves to the same causes that originally produced the disease, it cannot be a matter of surprise to find frequent returns recorded; particularly in a disease like intermittent fever, where the tendency to reappearance, independent of external agencies, is proverbial.

But the tables show one striking fact—in no single instance did the disease prove rebellious when the patient took larger quantities of the cinchonia and for a longer period. Every case of relapse was speedily cured by the same remedy.

The same tables enable us to draw an inference as to the average amount of cinchonia required in the treatment of ordinary fever and ague. Thus, in the seventy-nine cases, without relapse, the average taken by each patient was twenty-four and one-half grains.

In the twenty-three cases, with return of chill, the whole average was seventy grains to each patient, embracing all the period he was under treatment. In the total one hundred and two cases, the average was thirty-five grains to each.

A question may very naturally arise, how far the fluidrachm of muriated tincture of iron, contained in each fluidounce of the solution, contributed to the cure. This question, an enlarged experience with the sulphate of cinchonia in different forms of administration and with varied combinations, can alone determine. The reason for its use was based partly upon its affording a convenient mode of dissolving the sulphate of cinchonia, and partly upon the indication for the employment of iron in the anæmic habit of poor patients.

At the Northern Dispensary, the resident physician, Dr. Alfred M. Slocum, has been investigating the therapeutic effects of cinchonia during the last four months. In this period, seventy-six individuals have been treated for intermittent fever exclusively by this article. At the present time, not one of them is under care, nor has he any reason to suppose that a permanent cure has not been effected in every case. The proportionate number of returns of the chills was about the same as in the foregoing tables, or perhaps even less. A renewal of the remedy uniformly effected a cure.

He administered it according to the following formula: ℞.—Cinchoniæ sulphatis ʒss; acidi sulphurici aromatici guttas xl; aquæ f℥viij. Solve.

The dose usually given was a tablespoonful (two grains) every hour in the early part of the morning of the expected chill; and, for the four or five successive days, the same quantity three times a day.

After the chills were checked, he gave three grains of Vallet's mass three or four times daily for two weeks, either alone or in combination with one grain of the sulphate of cinchonia.

For the mere purpose of arresting the chill, Dr. S. has uniformly employed the simple solution above, thereby affording a proof that the cinchonia is possessed of inherent anti-periodic properties independent of all combinations.

A tabular statement of these cases could readily be prepared, but as they will probably be published in detail hereafter, such a statement would be premature here.

The writer of this paper has uniformly employed the cinchonia in his private practice for a twelve-month past, and could furnish some very interesting confirmations of the facts adduced above, but as the paper has already attained an undesigned length, those details must be omitted.

In every instance he has employed it, there has been no evidence of a returning chill. Though this may, in a measure, be owing to the form of combination and to the mode of employment. The form is: ℞.—Cinchoniæ sulphatis gr. xx; acidi sulphurici aromatici gutt. vj; extracti piperis fluidi gutt. x. Misce et fiant pilulæ xx.

The mode is the customary one of giving two pills every hour in the early part of the morning of the expected chill until eight or ten grains are taken. The next day (in the case of a tertian) half of the quantity, and the third day the remainder; after which, the patient is uniformly directed to take six pills on the mornings of the eighth, fifteenth, and twenty-first or twenty-second days. Distress in the head, or ringing in the ears, has not been observed in any instance. The concurrent use of iron, or the bitter tonics, is only resorted to where a special indication exists.

The experiences above detailed, derived from the practice of different physicians and in separate institutions, show conclusively, in the writer's opinion, that the sulphate of cinchonia, either alone or in combination, is entitled to more consideration than it has yet received from the medical profession.—*Quarterly Summary of Trans. of Coll. of Phys. of Phila.*, vol. ii., N. S., No. IX.

Cephalic Version in the Shoulder Presentation with the Arm in the Vagina.—Dr. Penrose communicated to the College of Physicians of Philadelphia, June 6, 1855, an interesting case of shoulder presentation, in which he brought the head of the child to the superior strait, instead of making version by the feet, as usually recommended. Dr. Penrose's attention was called to this plan of treatment by the paper of Dr. Wright, of Cincinnati (see this *Journal* for July, 1850, p. 150).

The following is the history of the case: "On the evening of the 3d of April I was called, by a midwife, to see Mrs. M——, as a case of difficult labour which she could not manage. On reaching the patient, I learned that she had been taken in labour some time in the morning; that at two o'clock she had given birth to a child, and that the midwife, on making an examination, discovered a second child, presenting by the shoulder, its arm being in the vagina. This was at two o'clock in the afternoon. I did not see the patient until about seven o'clock, five hours after the rupture of the membranes. I then found her with the uterus contracted spasmodically upon the child, suffering a great deal of pain in consequence, whilst her condition had not been at all improved by brandy freely given by the midwife.

On making an examination, I found the arm in the vagina, considerably swollen, the shoulder at the superior strait, the head high up in the right iliac fossa, being readily felt through the abdominal walls, the back of the child towards the symphysis pubis. Having carefully diagnosed the position of the child, I determined to resort to version by the *feet*, but met with so much difficulty from the firm contraction of the uterus, together with the great irritability and restlessness of the patient, who rolled and struggled so violently when I attempted the operation, partly, no doubt, from the effects of the brandy she had taken, that I was forced to desist. I then determined to try the plan of treatment as suggested by Dr. Wright, which consisted, as the first step, in carefully returning the arm into the cavity of the uterus, which was not very difficult, and then, with two fingers on the shoulder I endeavoured, not so much to push it up, as to slide it away from the superior strait, attempting, in fact, to imitate spontaneous version, by causing the whole body of the child to revolve in the cavity of the uterus; this action upon the shoulder was very much facilitated by an external manipulation, through the abdominal walls, upon the head in the iliac fossa, which consisted in attempting to force it toward the superior strait. To my surprise, the shoulder readily yielded and ascended; the next minute, still continuing the process, the neck, and shortly after the side of the head, were felt at the superior strait, and then, by a little more manipulation, the vertex was brought down in the left occipito-anterior position. The moment the head was placed in the proper position, the patient expressed herself completely relieved from the severe pain she had been suffering for hours.

For a time, the uterus ceased entirely to act, but pains coming on, they were stimulated by ergot, the parts having been dilated by the passage of the first child, and, in about an hour after, the child was born ALIVE.

It is proper, however, to state, as explaining, to a certain extent, the facility with which the operation was performed, that the child weighed only five pounds, yet, on the other hand, it should be recollected that the smallness and mobility of the child are, perhaps, the most common cause of shoulder presentations, and hence, in such presentations, we may expect, very generally, to have small children to deal with, and, moreover, that version by the *feet* had been attempted, and had not been accomplished.

It might be urged that, as the child was not large, the case might have been left to nature, and labour terminated by spontaneous evolution. But what are the facts of the case? Five hours had elapsed since the rupture of the membranes, and one of the earliest changes noticed when spontaneous evolution takes place had not yet occurred; I refer to the rotation of the presenting shoulder to the symphysis pubis, as preparatory to its engagement beneath the arch; indeed, the spontaneous expulsion of the child in these case is the exception, not the rule; and when it does happen, if we think for a moment on the mechanism of labour by which delivery is accomplished, we cannot fail to perceive that the mother must be exposed to all the dangers attending a long and painful labour, while the child is so powerfully compressed that death is the general result. Velpeau gives statistics of one hundred and thirty-seven cases of spontaneous evolution, in which but twelve children were born alive.

It is asserted by some that an error of diagnosis has existed in those cases where it is stated that version by the vertex has been successfully performed in shoulder presentations; that they have been really cases of head presentation, complicated by a descent of the arm. But this certainly was not so in the case to which I refer, the head being distinctly felt in the right iliac fossa, through the abdominal walls, whilst the partial introduction of the hand into the cavity of the uterus, in the attempt to make version by the feet, enabled me perfectly to recognize the position of the child.

Again, it is said that the operation of version by the vertex is a very difficult one, that we cannot, without subjecting the mother to very great danger, push up the presenting part of the child, and search for the head; and then, having found it, that we cannot grasp the round and slippery occiput and bring it to the superior strait. This objection in many cases may be well founded, but the operation which I have related consisted, rather, in pushing the shoulder away from the superior strait, causing, thereby, the child to revolve in the cavity of the uterus; of course, as soon as such a motion of rotation is communicated to it, by pushing away the shoulder, we must, of necessity, have some other part brought to the superior straight, which part will be first the neck, then the head, and by a little manipulation the occiput can be brought down, and an *impracticable* case of labour can be thus changed, without, or with comparatively little, pain to the patient, and in a few minutes, to one of the most simple character; and not only thus changed, but effected without exposing the child to the great risks to which it is always liable when version by the feet is resorted to; and, if an attempt to make version by the vertex should fail, without giving our patient any more pain, our hand being in the vagina, our fingers in the mouth of the uterus, we can most easily, if the case admit of it, pass our hand upwards, grasp the feet, and bring them down.—*Summary of Trans. of Coll. Phys. of Philada.*, vol. ii., N. S., No. ix.

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Ovariotomy.—Dr. J. G. T. HOLSTON records (*Western Lancet*, Dec. 1855) a case of ovarian tumour, which he has successfully extirpated. The patient was 27 years of age; unmarried; health excellent. About three years ago her abdomen began to increase, and it has now attained a size which makes it a heavy burden to carry, and she determined to obtain relief.

On examination, Dr. H. found " the abdomen tense, and imparting a sense of fluctuation, like common dropsy, yet differing in so far that the fluid was evidently in a cyst within the abdomen, and could be lifted in mass. Vaginal exploration proved that canal and the cervix uteri all correct: the introduction of Simpson's sound found the cavity of the uterus empty, and that viscus somewhat enlarged, the sound passing 2½ inches. The uterus was more movable to the right than to the left, the hymen unbroken—her general health good—mind cheerful and perfectly reconciled to any event. Having determined to operate, she was directed to take a moderate dose of Epsom salts on the evening of the 11th, which operated mildly next morning; she was allowed a slight breakfast on the morning of the 12th, and no dinner, so as to avoid one source of danger from the chloroform, namely, vomiting, as well as to secure an empty state of the intestinal tube.

P. M., the room was carefully heated up to 80° Fahrenheit, without cutting off ventilation; the patient was dressed for the operation, in night-gown and chemise rolled up, a napkin around the pubis, and her lower limbs encased in drawers. At 2½ P. M., she placed *herself* upon her back on the operating table (a common dining-table covered with a quilt), her knees slightly drawn up, her feet resting upon the edge of the bed. Chloroform was now administered, and, after a slight stage of excitement, total insensibility ensued that continued to a great degree all the afternoon. The incision was made through the linea alba, from about 1 inch below the umbilicus to 1½ inch above the pubis, 7 to 8 inches in length. No adhesions were found on the anterior aspect of the tumour, which appeared evidently filled with fluid, of which a trocar drew off about two gallons, the appearance of black coffee, but quite fluid, and exhaling a soup-like odour. A ligature had previously been passed through the walls of the cyst, and, by strong traction, the whole of it was brought out of the abdomen, the assistants applying sponges wrung out of warm water on each side. It proved to be the left ovary, the pedicle consisting of the broad ligament and Fallopian tube, whose fimbriated extremity, as large as the hand, was spread over the tumour, apparently holding it in its grasp. A needle, armed with a double ligature, was passed twice through this pedicle, the ligatures firmly tied on each side, and, by a stroke of the scalpel, the whole mass was removed. Not 4 ounces of blood was lost in the operation, beside what the tumour contained, and no part of the viscera was visibly exposed, except the left side of the uterus, when the ligatures were tied, as the abdominal parietes were closed by the sponges in proportion as the tumour was withdrawn. The wound itself at once contracted to about 4 inches in length. Two harelip sutures were introduced with adhesive strips between them and a coating of collodion over all, closing the wound hermetically except at the lower extremity, where the ligature was left hanging out—the dressing was completed by a compress of flannel and a broad bandage of the same material. Her clothes were arranged, she was placed in bed, and every vestige of the operation removed before the chloroform was finally withdrawn, she having been about one hour under its direct influence.

The whole tumour weighed 26 pounds, of which the cyst was 2¾, the fluid contents 23¼ pounds; the cyst might have contained a pint of blood.

The patient had the first motion from the bowels on the sixth day after the operation, after taking six cathartic pills, and remained regular afterward, having a motion daily. Dr. H. deemed it of the highest importance not to have her bowels acting sooner. She commenced sitting up the 20th, 8 days after the operation. The ligature came away on the 17th day, the wound entirely closed the next day, and, on the 31st of October, she left for home, fifteen miles off, in vigorous health and exuberant spirits."

Use and Effects of Chloroform in Labour.—Dr. Knight read before the Louisville Medical Club, September 4th, a paper on this subject, from which we make the following extract:—

"From an experience of several years in the use of chloroform in obstetrical practice, I am compelled to acknowledge that I have been entirely disappointed in the estimate that, from the representations of gentlemen of acknowledged worth and ability in the profession, I was at first led to place upon it. The most objectionable feature that is presented to my mind in the use of this agent in labour, is that it produces a weak and inefficient action of the uterus, and thereby paralyzes the most powerful and important agent concerned in the expulsion of the child.

"Not only reason but experience proves this (but too clearly) to be the result of its action. For while we admit the effect of its power upon the muscular system generally, we are at the same time compelled to admit a similar action upon the muscles of the uterus, and whatever amount of muscular relaxation and debility may be induced by means of the agent employed, precisely in that ratio will the expulsive efforts of the uterus be rendered inefficient or null.

"In a very large majority of cases in which I have used chloroform, the conviction of its tendency to greatly prolong the natural period of labour has been forced upon me, and in several instances where every circumstance seemed to indicate a speedy and easy termination of this natural process, in which I was persuaded by the patient or her friends, to use chloroform, the expulsive efforts of the uterus were so enfeebled as to render that which, as I have remarked, at first gave every evidence of an easy and rapid termination, both a slow, tedious, and difficult process.

"In face and breech presentations, where the life of the child is always endangered in proportion to the length of the labour, I would on no account advise the use of chloroform, and I think the same remark applicable to any other case of labour where a speedy termination from any cause is desirable.

"Although I have been greatly disappointed in my expectations as to the value of chloroform in obstetrical practice, I would not be understood as condemning its use. That there are cases in which it is not only admissible but extremely useful I am perfectly willing to admit, and at the same time that I would censure a too general or exclusive resort to its use, I would not banish it altogether from the list of useful agents employed in obstetrical practice.

"I am perfectly satisfied that in two cases which recently came under my observation, great benefit resulted from its employment. These were both cases of arm presentation, and in each the liquor amnii had been evacuated for several hours; there was perfect contraction, and complete rigidity of the os uteri, and after having used the ordinary means for the promotion of dilatation, without rendering the parts sufficiently lax to introduce my hand, I resorted to chloroform. As soon as the effect of the chloroform was sufficiently manifest, I made an examination, and to my delight I found in each case complete relaxation of the previously rigid structures, introduced my hand without difficulty and was able to effect turning with great ease. Now, in cases of this description—although I admit they are rare—I think chloroform not only admirably adapted, but imperatively called for. Indeed, in most cases of excessive uterine contraction, and in all in which rupture of the uterus is threatened, I should think chloroform was indicated, unless there was some special constitutional objection to its use.

"My experience with anæsthetic agents in operative midwifery is not very large, and so far as it goes, has not inclined me to form a favourable opinion of their use. I do not know in how many cases requiring an operative procedure I have administered chloroform, but I am very positive that I have derived no benefit from its use in a single instance; and in some cases where the forceps were required, as well as in a few cases of craniotomy, I am sure that it proved injurious by depriving the patient of consciousness, which all practitioners are aware is an indispensable safeguard.

"It will be observed from the preceding remarks, that the range which I concede to chloroform in midwifery, is very limited. If I were called on to express in a single line, the only circumstances in which my experience leads me to think anæsthetics either demanded or expedient in parturition, I should say *they are required only in powerful, or irregular, or excessive uterine action.* And if I add to this, spasmodic retraction and rigidity of the neck, nervous excitement and intellectual disturbance, I have included the whole catalogue of conditions in which I am now ever disposed to insist upon the induction of anæsthesia.

"I claim to have awarded to this agent a fair and impartial trial in obstetric practice, and believe I am wholly free from any prejudice against its use, that has naturally, and I hope logically, grown out of a somewhat extensive experience in its application. No one would hail with greater pleasure than myself, the discovery of an agent which, while it would annul the pains of childbirth, would neither prolong the process nor endanger the life of the patient. Chloroform, however, I am free to say, has not in my hands proved to be this agent, and I cannot but condemn the use which is now so generally made of this most potent and oftentimes hazardous remedy for the single purpose of allaying pains which, as every one knows, so seldom in themselves prove fatal.

"I but repeat a truism, when I remark that in the great majority of cases of natural labour, if the pains be regular, women are exposed to but little danger: and I belong to that school of practitioners who hold that the less manual, or medicinal interference with a process which will terminate spontaneously and safely, the better.

"I am aware that my views upon this subject are neither the most general nor popular among parturient women, whose fears, it is well known, are easily excited, and who are ever ready to try any agent which promises even a temporary suspension of their sufferings. I am also aware that among females in this condition, the obstetrician who promises the greatest immunity from pain, is most in request. But I do not wish to be considered as implying, in the above remark, any suspicion of the honesty or candour of those who differ with me in opinion.

"To conclude the brief, and I feel very immethodical remarks I have presented to the Club, I wish to reiterate the following summary of my experience:—

"1st. Chloroform administered in parturition, produces great muscular relaxation, and thereby renders the expulsive efforts of the uterus feeble and inefficient.

"2d. It causes partial, if not total, suspension of voluntary muscular effort, which tends greatly to prolong the natural period of labour, and thereby invites the attendant dangers of this condition.

"3d. It is inadmissible in uterine hemorrhage.

"4th. It is inadmissible in operative midwifery.

"5th. It is inadmissible in all presentations in which the life of the child is endangered, in proportion to the prolongation of the labour."—*Western Journ. Med. and Surg.*, Sept. 1855.

MASSACHUSETTS MEDICAL SOCIETY.

PRIZE QUESTION.

Through the liberality of one of its Fellows, the Massachusetts Medical Society is authorized to offer the sum of *One Hundred Dollars* to the author of a Dissertation, which may be adjudged worthy of a prize by a Committee appointed by the Councillors of the Society, on the following subject, viz:—

"*The History and Statistics of Ovariotomy, and under what circumstances the operation may be regarded safe and expedient.*"

Dissertations for the Prize must be sent, post-paid, to the Corresponding Secretary, Dr. C. E. Ware, 6 Temple Place, Boston, on or before the *First Wednesday* of April, 1856.

Each Dissertation must have written upon it some device or sentence, and be accompanied by a sealed packet on which is written the same device or sentence, and within which is inclosed the author's name and residence.

The packet accompanying the successful Dissertation will be broken, in open meeting, at the annual meeting of the Society, in May, 1856, and the author's name announced. Such portions of the Dissertation as the Society may desire, may then be read, and the whole may be printed in the Society's Communications.

All unsuccessful Dissertations will be deposited with the Corresponding Secretary, from whom they may be obtained, with the sealed packet unopened, if called for within one year after the result shall have been declared.

The Prize is open to the profession throughout the country.

By order of the Massachusetts Medical Society.

Roxbury, Mass., *July* 31, 1855. B. E. COTTING, *Rec. Sec.*

PHILADELPHIA COLLEGE OF MEDICINE.

FIFTH STREET, BELOW WALNUT.

The SPRING SESSION will commence early in March, 1856, and continue until the middle of July.

The WINTER SESSION of 1856—7 will commence in October, and terminate in the following March.

DEGREES are conferred in MARCH and JULY.

FACULTY.

GEORGE HEWSTON, M.D.,	Professor of Anatomy.
B. HOWARD RAND, M.D.,	" Medical Chemistry.
HENRY HARTSHORNE, M.D.,	" Institutes of Medicine.
JAMES L. TYSON, M.D.,	" Materia Medica.
ISAAC A. PENNYPACKER, M.D.,	" Theory and Practice of Medicine.
JAMES BRYAN, M.D.,	" Surgery.
LEWIS D. HARLOW, M.D.,	" Midwifery and Diseases of Women and Children.

JOSEPH PARRISH, M.D., Emeritus Professor of Midwifery and Diseases of Women and Children.

FEES: For one full Course, $84; Perpetual ticket, $150; Matriculation, $5; Practical Anatomy, $10; Graduation, $30.

Examinations are given daily by the Professors upon each branch. Second-course students are furnished gratuitously with the ticket of the Philadelphia or Pennsylvania Hospital for one year; and such as are sufficiently advanced have the opportunity of attending out-door patients in connection with the clinique under care of the Professors.

For further information, apply to B. HOWARD RAND, M.D., DEAN,
At the College, Fifth Street below Walnut.

UNIVERSITY OF LOUISIANA, MEDICAL DEPARTMENT.

The Annual Course of Lectures in this department will commence on Monday, November 19, 1855, and will terminate in the ensuing March.

JAMES JONES, M.D.,	Professor of Practice of Medicine.
J. L. RIDDELL, M.D.,	Professor of Chemistry.
WARREN STONE, M.D.,	Professor of Surgery.
A. H. CENAS, M.D.,	Professor of Obstetrics.
A. J. WEDDERBURN, M.D.,	Professor of Anatomy.
GUSTAVUS A. NOTT, M.D.,	Professor of Materia Medica.
THOMAS HUNT, M.D.,	Professor of Physiology and Pathology.
CORNELIUS BEARD, M.D., SAMUEL CHOPPIN, M.D.,	Demonstrators of Anatomy.

The rooms for Dissecting will be open on the third Monday in October.

The Faculty are Visiting Physicians and Surgeons of the Charity Hospital, and attend this Institution from November to April.

The Students accompany the Professors in their visits, and, free of expense, enjoy extraordinary practical advantages.

There are, during the Session, about eight hundred persons prescribed for daily.

In 1854, the number of patients was thirteen thousand one hundred and ninety-two.

THOMAS HUNT, M.D., *Dean.*

The Administrators of the Charity Hospital elect annually, in April, fourteen resident students, who are maintained by the Institution.

TO READERS AND CORRESPONDENTS.

The following works have been received:—

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Archives D'Ophthalmologie. Par M. A. JAMAIN. September and October, 1855.

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The Glasgow Medical Journal. January, 1856.

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The Dublin Quarterly Journal of Medical Science. February, 1856.

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New York Medical Times. Edited by HENRY D. BULKLEY, M. D. January, February, and March, 1856.

The Monthly Stethoscope and Medical Reporter. Edited by G. A. WILSON, M. D., and R. A. LEWIS, M. D. January, February, and March, 1856.

The American Journal of Science and Arts. Conducted by Prof. B. SILLIMAN, B. SILLIMAN, JR., and J. D. DANA. January and March, 1856.

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Southern Medical and Surgical Journal. Edited by L. A. DUGAS, M. D., and H. ROSSIGNOL, M. D. January, February, and March, 1856.

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New York Dental Recorder. Edited by Charles W. Ballard, D. D. S. December, 1855. January, 1856.

The Dental News Letter. Edited by J. D. White, D. D. S., M. D., and S. R. McCurdy, D. D. S. Jan., 1856.

The American Journal of Insanity. January, 1856.

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The New Hampshire Journal of Medicine. Edited by Geo. H. Hubbard, M. D. January, February, and March, 1856.

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The Medical and Surgical Reporter. Edited by S. W. Butler, M. D. January, February, and March, 1856.

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Nashville Journal of Medicine and Surgery. Edited by W. K. Bowling, M. D., and Paul F. Eve, M. D. January, February, and March, 1856.

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The North-Western Medical and Surgical Journal. Edited by Drs. N. S. Davis and H. A. Johnson. December, 1855. February, 1856.

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New Orleans Medical News and Hospital Gazette. Edited by Drs. Choppin, Beard, and Brickell. February, 1856.

The Medical Independent. Edited by Henry Goadby, M. D., Edward Kane, M. D., and L. G. Robinson, M. D. March, 1856.

Communications intended for publication, and Books for Review, should be sent, *free of expense*, directed to Isaac Hays, M. D., Editor of the American Journal of the Medical Sciences, care of Messrs. Blanchard & Lea, Philadelphia. Parcels directed as above, and (carriage paid) under cover, to John Miller, Henrietta Street, Covent Garden, *London;* or M. Hector Bossange, Lib. quai Voltaire, No. 11, *Paris*, will reach us safely and without delay. We particularly request the attention of our foreign correspondents to the above, as we are often subjected to unnecessary expense for postage and carriage.

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XIII. The Transactions of the American Medical Association. Vol. VIII. 8vo. pp. 763. Philadelphia, 1855. - - - - - - - - - 412

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XIV. Report on Insanity and Idiocy in Massachusetts, by the Commission on Lunacy, under Resolve of the Legislature of 1854. Mass. Leg. Doc. for 1855: House, No. 144. Boston, 1855, pp. 202. - - - - 429

XV. On the Organic Diseases and Functional Disorders of the Stomach. By George Budd, M. D., F. R. S., Professor of Medicine in King's College, London, &c. &c. Philadelphia: Blanchard & Lea. 1856. 8vo. pp. 252. - - - - - - - - - - - - - - 436

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XVII. Practical Treatise on the Diseases of Children and Infants at the Breast, including the Hygiene and Physical Education of Young Children. Translated from the French of M. Bouchut, with Notes and Additions by Peter Hinckes Bird, F. R. C. S., author of the Jacksonian Prize Essay for 1849, on Erysipelas. 8vo. pp. 776. London, 1855. - - 448

XVIII. Anales de la Sociedad de Medicina de Montevideo. Desde Setiembre de 1854 hasta Mayo de 1855. Numeros 5. 8vo. 178 pp.
Annals of the Medical Society of Montevideo; from September, 1854, to May, 1855, inclusive. Five numbers. . - - - - - - - 451

XIX. Army Meteorological Register, for twelve years, from 1843 to 1854, inclusive. Compiled from observations made by the officers of the Medical Department of the Army, at the Military Posts of the United States. Prepared under the direction of Brevet Brigadier-General Thomas Lawson, Surgeon-General United States Army. Published by authority of Hon. Jefferson Davis, Secretary of War. Washington, 1855. Fol. pp. 763. - - - - - - - - - - - - - - - 452

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ART. I.—*On the Epidemic of Yellow Fever in Norfolk and Portsmouth, Virginia, during the Summer and Fall of* 1855. By J. D. BRYANT, M. D., one of the Physicians to St. John's Orphan Asylum, one of the Obstetricians to St. Joseph's Hospital, &c.

NORFOLK and Portsmouth are situated on low plateaux, near the mouth of the Elizabeth River; Norfolk being on the east, and Portsmouth nearly opposite on the west bank. The immediate site of Norfolk is slightly more elevated than that of Portsmouth, though not sufficiently so to make it an exception to the general character of the neighbourhood, which is low and marshy. Water lies near the surface of the ground, and may be obtained at a depth of from four to six feet, and in some places even less. Cellars and underground basements are consequently damp; and, when constructed, are unsuitable for the purposes of habitation. Portsmouth is intersected, or rather divided from Gosport, by a marshy space of about a quarter of a mile wide, and considerably more than that in length. The whole southern portion of the city faces upon this marsh. Across the eastern portion of it is a wooden causeway, at present in a state of decay, connecting Gosport to Portsmouth. On the north side of Portsmouth is a run, or rather a narrow slip of marshy ground, which extends in a southerly direction through the city, with houses built upon its margin; the streets on each side being connected by wooden bridges. The muddy surfaces of both these marshes, with their vegetable growth, are, except for a short time during floodtide, exposed to the rays of the sun, and emit a disagreeable odour. Besides these, innumerable marshy gulleys irregularly furrow the earth in a south and westerly direction. The surrounding country for many miles partakes of the low, damp condition of the immediate sites of the two cities. At about eight miles south and west of them commences the Great Dismal Swamp, which extends thirty miles from north to south, and ten miles in width between Chesapeake Bay and Albemarle Sound. The soil is sandy, here and there somewhat loamy, and is of the modern tertiary formation. The natural vegetable growth, as might be supposed, is sparse and stunted, though the crops, suitable to the soil, are sufficiently generous. The population of Norfolk is estimated at 16,000, and that of Portsmouth at 11,000. Some of the streets of the former are well paved; and, considering the size of the two cities, houses of the better class and fine public buildings are numerous.

The condition of these cities during the summer of 1855 was particularly favourable to the prevalence of epidemic disease, and especially of yellow fever. Long continued observation has proved, that where animal and vegetable decomposition is extensively going on, in a humid atmosphere, with a temperature ranging from eighty to ninety degrees—three of the conditions necessary to the production of this disease—and when the fourth element, the miasm peculiar to yellow fever, is blended with their exhalations in sufficient quantity, it must prevail. The three first conditions existed to an unusual degree in Norfolk and Portsmouth, during the summer of 1855, and needed but the evolution or production of the fourth, to develop this disease.

As already stated, Portsmouth proper is bounded, on the south, by an extensive marsh. This is strewed over with logs, timber, wrecks of vessels, and other forms of vegetable matter, in every stage of decomposition; while the marsh itself, festering in the sun, generates offensive and noxious vapours. The same description, though to a much less degree, must be applied to the marsh, or rather run, which intersects the city north and south, as well as the others which intersect the various parts of the plateau upon which the city stands. But this is not all. Numerous docks on the eastern front of the city are, in like manner, so many points whence offensive and unhealthy gases are generated and wafted by every breeze over the neighbourhood. The dead level of the plain on which the city stands, and which, therefore, does not admit of adequate drainage, is another source of evil; since pools of water remain, for several days after every rain, in most of the streets, which are unpaved, while waste waters, compost, offal, or garbage of every kind, table and kitchen, animal and vegetable, lie where they are thrown, to putrefy under an almost vertical sun. This is particularly true of the lots attached to the houses, and the public streets in front of them. The *sellæ familiaricæ* are another source of offensive exhalation. These are seldom more than four or five feet deep; in many instances, no well whatever is dug, and the small sheds built up, simply indicate where the calls of nature are to be obeyed. Another eminent source of disease exists along the entire river front of the city, from the ferry to the navy-yard, in the shape of thickly set, ill ventilated, over-crowded, dilapidated frame tenements. These border immediately upon the offensive docks and the marsh, already named. They are occupied by the very poor, both black and white, two and three families being in each house, and, as an inevitable consequence, surrounded and choked up with filth of every description. Although the first cases of the fever occurred in persons from on board of the Benjamin Franklin, at Gosport, where that vessel "broke out" her hold, yet it was in this portion of Portsmouth proper that the epidemic made its first and most deadly ravages. Not a human being of either sex, or of any age, who remained within this precinct, so far as I could learn, escaped the fever; and most of them died. There was still another untoward condition of things found there. In consequence of the water lying so close to the surface of the ground, cellars and underground basements, as before remarked, are inadmissible. Nevertheless, they exist; and some of them were found, throughout the entire epidemic, to be tenanted by one, and even two families; and as it was poverty which kept them there, it may be supposed that their usual retinue of squalor and filth bore them constant company. But without dwelling longer in detail, such was the hygienic condition of Portsmouth when the epidemic commenced; and the wonder is, not that the pestilence prevailed, but that it has not annually swept the city from the time these conditions began to exist. And still more surprising is it that the city authorities should have suffered these evils to accumulate, in the full knowledge of the presence of the fell destroyer hovering about the Atlantic coast. Let us now inquire what was the condition of her sister city.

Norfolk, being the elder and more populous city, has a much greater number of citizens whose pecuniary means enables them to enjoy, to a fuller extent, the appliances of comfort and cleanliness. Its slightly increasing elevation of surface, as it recedes from the river, gives it also greater facilities of drainage. Many of its streets being paved, affords it another advantage in this respect, which Portsmouth does not possess. But, notwithstanding these favourable items in the account, her port-wardens and others give us ample information in regard to its unsatisfactory hygienic condition. On the 24th of July, about four days previous to the occurrence of the first case there of yellow fever, and one month after it had appeared in Portsmouth, we find the port-wardens advertising for contracts to cleanse some of the pestiferous nests, in the shape of docks, which threaten to be so many sources of malignant disease. In the same paper which contained these advertisements is an editorial, from which I make the following extract:—

> "We are glad to find that assiduous and well directed efforts are being made at last to place the city in a good sanitary condition, to clean out the gutters, remove the filth from the alleys and back lots, and thus to prevent the deadly and disastrous visit of fever or other contagion, and perpetuate the good name which our city has justly acquired for salubrity. Roanoke dock, too, of which so great complaint has been made, is to be deepened, and the accumulated pol-

lution, with its abominable stench, removed, as will be seen by the advertisement of the port-wardens. If this had been done two months ago, the public would have been much better satisfied. But better late than never.[1] Extraordinary pains should now be taken, and perseveringly continued, to get rid of all probable sources of disease. There are two or three other docks, both on the east and west of Roanoke Square, that are in a very bad state, and which also require immediate attention; and it is earnestly hoped the authorities will not be slow in using suitable means to correct all such exciting evils. The weather is sultry, humid, and unwholesome; vegetable and animal substances decompose and decay rapidly; and in some parts of the city there are very unpleasant and offensive odors, too plainly indicating the existence of filth that should not be allowed to remain an hour longer. Damp cellars and basement rooms should be examined, and filled up, or raised, and disinfectants freely applied."[2]

This account of the condition of Norfolk, made just anterior to the commencement of the epidemic, might, with equal truth and justice, be applied to the whole infected region covered by the two cities. The account has been drawn up from observation of the localities named, and by those who, for the sake of the character abroad of their fair city, might naturally desire not to display such facts, but yet who have not shrunk from the duty of making their sad plight publicly known, with the hope that the sanitary regulations, which the case so urgently demanded, might be made in time to prevent the sorrowful desolation which, three weeks later, swept like a hurricane through every house.

To some it might seem unnecessary to seek further for the causes originating the late epidemic, than those which have been stated. At least three of the four conditions necessary to the production of epidemic yellow fever, existed there to an extent which justly excited the anxiety of the citizens and their city governments, viz: animal and vegetable matter decomposing in a humid atmosphere, with the thermometer ranging at 94° in the shade. Remarkable for salubrity and healthfulness as Norfolk and Portsmouth are said to be, nevertheless yellow fever has several times appeared there, and in the former place it has frequently occurred since its advent in 1800; and on several occasions has made its first appearance in Barry's Row, where the first Norfolk cases occurred last summer. May not then, I ask, the peculiar poison, or whatever agent is supposed to constitute the fourth condition necessary to produce the disease, have been lurking amidst these elements, ready, when all the conditions necessary to its generation were constituted, to burst forth. Although the first case of the fever of last summer did not originate in Norfolk, but in Gosport, the southern suburb of Portsmouth, nearly one mile distant from the former place, yet this is not impossible; and if it be a fact, as some say, that one case of the fever was treated at Gosport before any occurred on board of the Benjamin Franklin, then it becomes probable that such may have been the origin of the late epidemic. And unless it can be satisfactorily proven, either that this was a mistake, or that the patient contracted the disease elsewhere, it would be extremely difficult to demonstrate that this was not the commencement of the epidemic. No case of the fever occurred at Norfolk until three weeks after it had appeared in Portsmouth; and when it did commence its ravages there, the first cases occurred in persons who had fled, panic-stricken, from Portsmouth. The supposition of its local origin, therefore, which I have advanced as a possibility, and, on the strength of the alleged case, as a probability, will not be acceptable to most minds. It is acceptable to mine only on the ground of that individual case being proven to be true. I am not satisfied that it is so proven. Nothing, so far as I can learn, was heard of it, nor was it even named until after the imprudence was committed of permitting a vessel, subsequently shown to be infected, to pass up from quarantine. Besides, the attending physician of the alleged first case, states it to have occurred on the 24*th of June;* whereas, it was on the 17*th of June* that the first case actually occurred on board of the steamer. It remains, therefore, in the second place, to state the popular opinion respecting its origin; and by the term popular, I mean to designate not so much laymen as medical men. This opinion, then, as is almost universally the case, attributes the origin of the late epidemic to the arrival of an infected vessel from a foreign port. The scape-goat, in the present instance, is the steamer Benjamin Franklin, from the Island of St. Thomas. The history of the affair is as follows:—

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[1] These, and all similar works, should be performed *only* in the fall and winter months. The stirring up of such materials, or even of ordinary soil, in the spring, and especially summer months, has often been connected with outbursts of epidemic disease, and no doubt had its due share in the present case. How much more fatal must it have been when performed after the epidemic had already commenced!

[2] The Southern Argus, July 24th, 1855.

The steamer Benjamin Franklin left the Island of St. Thomas towards the end of May, the yellow fever being at the time prevalent there. Driven by stress of weather from its course, it arrived at quarantine below Portsmouth, on the 7th of June; having put into that port for repairs. "She was boarded by the health officer, to whom the captain stated that she had had no case of yellow fever on board; a fireman had died suddenly of disease of the heart, and the man who took his place had died suddenly of exhaustion; with these exceptions, the crew had been entirely free from disease. The steamer remained at quarantine twelve days, and no case of disease having occurred during that time, and the health-officer finding the vessel in a cleanly condition, with the consent of the Board of Health gave her a permit to pass up into the harbour on the 19th of June, upon the positive condition that the hold was not to be broken out. Having contracted with a party in Gosport to have her repairs done there, she was taken up to Page & Allen's ship yard (next to the Navy Yard). There she remained nineteen days, during which period, it is stated, the captain violated his engagement in having the hold broken out. On the 5th of July, a man who had been at work on board of her was taken sick, and his disease proved to be yellow fever. This case occurred twenty-eight days after the steamer's arrival. The patient died on the 8th of July, on the third day of his being attacked. The town councils of Portsmouth immediately convened, and issued an order to send her back to quarantine, which was done forthwith. Following this case were a number of others, among whom were six of the hands belonging to the steamer, who were sent to the U. S. Naval Hospital, where two of them died. In addition to these, twenty of the residents of Gosport contracted the disease, of whom five died; leaving fifteen cases under treatment on the 24th of July—making in all twenty-seven cases, and eight deaths, in the space of nineteen days. At this date the disease was confined entirely to the vicinity of Page & Allen's ship yard, which was boarded up, and all communication with it interdicted." No case is shown to have existed beyond this small infected district which was not contracted within it—not even that solitary case, which afterwards came to be talked about; and Norfolk, as yet, remained entirely free from every trace of the disease.

This, however, is not the whole of the story. Deception had been practised upon the health-officer; for, on the day following that on which the steamer arrived at Gosport (June 21), and fourteen days before the first case of any citizen of Gosport occurred, a seaman, named James Palmer, had been received from her at the U. S. Naval Hospital. In half an hour afterwards, he was visited by the surgeon of the hospital, who found him moribund, but perfectly rational. The man stated that he was taken sick on the 17th—two days before leaving quarantine. Before 12 o'clock P. M. of the day he was taken to the hospital (21*st*), this seaman died of black vomit.[1] It is thus rendered evident that deception had been practised upon the health-officer, and that the first case of the yellow fever was that of a seaman belonging to and on board of the Benjamin Franklin. The authorities immediately communicated these facts to the owners in New York, who promptly dismissed Bynam from the command of the vessel, and appointed Captain Harrison to succeed him.

Although the panic had commenced, yet, up to the 24th of July, no case of the fever had originated out of Gosport; but, from this date, it commenced its ravages along the eastern edge of the city, among the squalid poor residing in the dilapidated tenements bordering upon the marsh already referred to, and along the river front. It swept through these like a tempest, sparing none, and slaying three in every five. The panic was now complete. The fell destroyer could not be arrested by barricades, or hygienic measures applied too late, and held high revelry over its prostrate victims. All, who could, fled. But, vain expedient! they carried the seeds of pestilence within them, and many fell by the way. The ties of blood were sundered; bonds of alliance were as if they had not been; friend shuddered, and shrank from friend; the sick and dying lay in hopeless despair, with none to moisten their parched lips, nor administer a soothing draught; while burial for the dead was with difficulty obtained. Though a departure from the cold formulæ of the statistician, this is no fancy sketch; it falls far below the truth. The population of the flourishing and heretofore healthy town of Portsmouth was reduced by flight or death from eleven to four thousand, and that of Norfolk from sixteen to five thousand. Except a few brave hearts, which nothing could appal, all who were not forced either by sickness or other necessity, to remain, had now left. The stores were closed—not even excepting the drug shops—their owners having, like the rest, either fallen or fled. The markets were unattended; none being willing to approach the city to supply its wants. And had it not been for the benevolence of other cities, gaunt famine must soon have added its horrors to those of the pestilence. There was not one house in which there were not some dead, until, as near as can now be ascertained, forty-five per cent. of the population died. Of the resident physicians, only four survived. The coloured people resisted the epidemic influence better than the whites; and I believe I may hazard the observation, that their degree of resistance was in proportion to the admixture of white blood. The mortality among the whites at Portsmouth is stated to be 42⅓ per cent., while that of the blacks was only 5¼ per cent. The pure African resisted better than the mulatto; and the degree of resistance in these again was less and less according to whether they were half-breeds, quadroons, or still nearer approximating to white. I made this subject a point of special observation, and my only reason for qualifying it is, that the impression is derived but from one series of observations. Others, of more enlarged experience, may now or hereafter be able to say whether or not it be correct.

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[1] The case of Mrs. Fox, above alluded to, occurred on the 24*th of June*, seven days after that of James Palmer, and three days after his death. The date in the former case is given on the authority of her attending physician; that of the latter, on the authority of the *Norfolk and Portsmouth Herald of* July 26, 1855.

It is on the 31st of July that we find the first public admission that the epidemic had invaded Norfolk. The announcement was made in these words:—

> "Every part of our city, excepting (we regret to state), *Barry's Row*, is healthful, and free from all epidemic disease. In the buildings alluded to, situated near the southern terminus of Church Street, there have recently been seventeen cases of malignant fever. There have been four deaths; six have nearly recovered, and seven are said to be exceedingly ill. We were as much surprised as others to hear this statement (yesterday) from a reliable source. But really it is no great cause of wonder that an infectious disease should break out in those abominably filthy hovels, in which there have been crowded during the intensely hot weather of the present month, a large number of extremely indigent persons, who had not the means, if they had the desire, to observe any degree of cleanliness. Sweltering amid the most disgusting filth inside of the houses, and just without the back doors, it is remarkable that the miserable and unfortunate inmates have not sickened and died by the dozen long ago. But, as if to hasten and insure the production of pestilence, at this ill-fated locality, several families of a congenial stamp removed over and took lodgings in that horrible and sickening receptacle of the destitute and suffering. The Board of Health have ordered the immediate removal of the sick and their families to Oak Grove, some distance beyond the city limits. The occupants

who were not sick will be removed forthwith, and the street above and below the *Row* has been barricaded."[1]

Such is the first public acknowledgment of the commencement of the epidemic in Norfolk. But it is believed to have been present there, unknown to the respectable editor whose words I have quoted, at least two weeks previous to the date of its public announcement. This is not only implied by another article in the same paper, which speaks of the noble zeal and commendable promptness with which the Sisters of Charity had devoted themselves to the task of nursing the victims, but also by the article itself, which speaks of seventeen cases; of four deaths as having occurred; and of six patients as having nearly recovered; all of which, in view of the course of the disease, could not have taken place under a fortnight. Considerable anxiety seems to have been exhibited to conceal the presence of the disease at Norfolk; and, with the data in hand, it is not easy either to affix the precise date of the first case there; or to state whether it was imported from Portsmouth, or originated in *Barry's Row.* It was, however, only on this day, July 31, that the Board of Health of Norfolk issued its first daily bulletin.[2]

From these evidences, therefore, we may fairly consider the epidemic as having a firm hold upon both cities at this date. Popular opinion, as already stated, attributes the origin of the epidemic at Gosport to the steamer Benjamin Franklin. But whether it was from this same source conveyed to Norfolk, will, I suppose, ever remain a disputed point. That yellow fever patients were imported, or rather transported themselves, from Gosport to Norfolk, simultaneously with its appearance in the latter place, is certain. In fact, every case which occurred there, at the commencement of the epidemic (already spoken of in connection with Barry's Row), is clearly traced to Gosport—every case, except the *first case,* which was that of a patient who died in a densely settled neighbourhood on Main Street, at the precise locality where the epidemic of 1821 commenced, and where several sporadic attacks, since that time, have taken their start. Unless, therefore, it can be shown that this patient had visited and become tainted in the infected district at Gosport, there is no evidence but that this epidemic may have commenced, as have several previous spells of the disease. There may not, however, be any necessity for this refinement of analysis. East and West Philadelphia, New York and Brooklyn, are not more intimately related, as to position and intercourse, than Norfolk and Portsmouth, and every serious epidemic which prevails in the one, must, in the natural course of things, affect the other. In treating of the origin, therefore, of this epidemic, while it cannot be denied that grave suspicion rests upon the steamer Benjamin Franklin, it should not be forgotten that the yellow fever has frequently presented itself in that region since the year 1800. Whatever inference is to be drawn from the alleged facts, I leave to others. If they do not seem clear and satisfactory, it is from the nature of the facts themselves. They are stated as they occurred. One thing, however, may be regarded as certain, namely, that unless all the conditions necessary for the production of epidemic disease had been ripe for action, there would have been no epidemic last summer in either place, even though the entire crew of the Benjamin Franklin had been infected with it. The poison of yellow fever existed, last summer, at Savannah, at Charleston, and elsewhere; yet there was no epidemic of the disease at either of those places. Fugitives carried it from the very heart of the infected district of Virginia to Baltimore, Philadelphia, and New York, and yet no epidemic disease whatever arose in any of those places; while, on the other hand, the disease may, and in all probability would have existed epidemically at Norfolk and Portsmouth, even if the Benjamin Franklin had never entered that port. Nevertheless, without the fear of being considered a contagionist,[1] I must hazard one other observation, indicative of the extreme danger and criminality of permitting infected vessels, at certain seasons, to pass up to the wharves of our cities and towns. The atmosphere, miasm, gas, or whatever other name may be used to designate the pestiferous contents of such a vessel, is deadly, as is abundantly proved in the history of almost every epidemic. Scarcely one occurs, which is not by popular rumour, or medical, or judicial decision, connected with the arrival of some vessel from an infected port; and as no city can guarantee the absence of those conditions which correspond with any given malignant agent, it would be as insane to permit their unmolested approach, as it would be to transport a Barry's Row to the same place. We know as little about the nature of the epidemic influence, as we know about the law which starts it on its mission—as the cholera—around the world, or keeps it confined—as the yellow fever—within certain zones or parallels of latitude. And as to the particular type of this latter disease, which has now three times, in as many consecutive years, raised such a wail of woe throughout our land, may it not be that its giant footsteps, directed by no law with which we are acquainted, are, in spite of all our puny efforts, unerringly directed northward? We have seen its fearful, almost unprecedented ravages at New Orleans, in 1853. We next see it at Savannah and Charleston, in 1854; and now, in 1855, in Norfolk and Portsmouth. Baltimore, Philadelphia, and New York lie directly in its present course.

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[1] The Southern Argus, July 31, 1855.

[2] Office of the Board of Health, July 31, 1855.—Report for the twenty-four hours ending this day at 12 M.: Cases of fever—6. Deaths—none.

The above are exclusively in Barry's Row. The Board have nothing to report from any other part of the city.—T. G. Broughton, *Secretary.*

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[1] The connection of vessels arriving from infected ports with the origin of yellow fever, does not, as it is charged, necessarily involve the idea of contagion. The exhalations of bilge-water, and the otherwise infected air of such vessels, may be the identical agent which, blended with the morbific elements on shore, combine to constitute the precise conditions upon which the evolution of the disease depends. That vessels are and have been, from the earliest periods of which we have any accounts, connected with the rise of epidemics, the public voice and the best medical authority constantly attest.

I have ventured upon these observations, in the full knowledge of the fact that yellow fever does not, like Asiatic cholera, pursue a direct migratory course. But the time was when cholera did not; and when we consider that a peculiarly malignant type of yellow fever is ravaging our seaboard, whose present course is northward, there is reason to fear that it may have sufficient force to make as deadly an impression here as it has elsewhere. When, in 1853, one hundred and seventy cases could occur in Philadelphia, of which one hundred and twenty-eight died, no apology need be made for raising a warning voice in time for sanitary reform.

From the 27th of July, the ravages of the pestilence steadily increased, especially, at Portsmouth; and, three weeks after this date, its violence, or rather the number of cases at Norfolk, greatly exceeded those of the former place, Norfolk being the more populous city. By the 25th of August, the average number constantly sick in Norfolk was five hundred, the population then being estimated at five thousand. The number of deaths were from sixteen to twenty per day, and the new cases exceeded twice that amount. In Portsmouth, at the same date, the whole number of sick was about four hundred, in a population estimated at four and a half thousand. The deaths averaged seventeen, and the new cases about thirty per day. The epidemic reached its height, at Portsmouth, by the 10th of September, on which day, the *reported* number of deaths was thirty-one. At Norfolk, it attained its maximum about the 22d of the same month, on which day the number of deaths was twenty-four. On several days, the deaths much exceeded both these figures. These statements are made on the authority of the published reports of the sanitary committees of both places respectively; but they fall much below the actual facts. The returns of the physicians were very irregularly made, and sometimes omitted entirely; while the published lists were frequently made from information derived from other sources than the official accounts. It is also well known that numbers sickened and died in both places, without the cognizance of committees, or any medical attendance whatever. The estimates here presented being derived from actual lists, containing the names and ages of the victims, are at least not chargeable with being exaggerations. In reference to this subject, a respectable publicist of Norfolk says :—

> "The vast majority of the victims were buried as 'unknown.' Could the entire number of those who died at home and abroad be ascertained, it would sum up fully 2,000. The records of Mr. Hawkins, at the almshouse, show that 1,200 were buried in two grave-yards under his charge, viz: the Cedar Grove and Elmwood cemeteries: 800 would, we think, be a moderate estimate for the burials in other places in and out of the city. We always found, when we undertook to 'inquire out,' the number of deaths on any given day, that it invariably exceeded the most extravagant guesses."

The estimate given above, of two thousand for the whole number of deaths in Norfolk, I believe to fall short of the actual number by at least five hundred. But taking it as the basis, and adding to it the estimate made of the entire mortality of Portsmouth, which some put at two thousand, and we shall have the fearful mortality of four thousand in a united population of nine thousand; or, in other words, a mortality of forty-five per cent. of the whole, and upwards of fifty per cent. of those attacked, which is scarcely exceeded by the most deadly epidemics on record, of this or any other disease.[1]

The climate of Norfolk and Portsmouth is bland and agreeable, and generally exempt from extremes of heat and cold. It is somewhat damp, and during 1855 exceeded, in this particular, the average of ordinary years. The temperature of the season was also higher than ordinary. The following table exhibits the maximum, minimum, and mean ranges of the thermometer for each month respectively, during which the pestilence prevailed. The first case occurred June 17, the last at the close of October, including a period of 137 days:—

Portsmouth, Va., 1855.		Thermometer attached.				Thermometer detached.				
		Sun-rise.	9 A. M.	3 P. M.	9 P. M.	Sun-rise.	9 A. M.	3 P. M.	9 P. M.	Daily mean.
June	4th instant	68°	70°	76°	74°	60°	68°	72°	68°	70°
	30th "	88	86	92	90	86	89	92	89	89
	Monthly mean	79	80	82	79	72	80	82	78	...
July	8th instant	78	76	74	76	70	74	74	72	74
	26th "	88	90	94	92	86	92	96	92	91
	Monthly mean	83	84	87	85	78	85	87	84	...
August	1st instant	84	90	92	88	84	90	94	92	88
	18th "	74	76	78	74	70	72	74	70	73
	Monthly mean	78	82	84	81	72	77	81	79	...
Sept.	12th instant	86	88	88	88	80	88	94	86	87
	28th "	70	72	72	72	64	68	78	66	70
	Monthly mean	79	81	81	80	74	71	81	76	...
Oct.	1st instant	76	74	74	76	66	70	78	74	73
	25th "	66	64	66	60	36	40	44	40	50
	Monthly mean	63	66	68	67	56	59	62	57	...

Some of the changes of temperature were very sudden, and often accompanied by rain. This was especially true of September, when fires, though

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[1] The following estimate, relating exclusively to Portsmouth, slightly reduces the ratio of deaths:—

	Population during fever.	
Whites	2,200	
Blacks	1,800	
		4,000
Cases, Whites . .	2,100	
" Blacks . .	1,700	
		3,800

Deaths, Whites	890
" Blacks	95
Whites, per cent. . . .	42⅓
Blacks, "	5¼

seldom kindled, were comfortable, and indeed necessary to modify the dampness and chilliness of the atmosphere. Overcoats and cloaks were comfortably worn during these spells of bad weather, and as quickly thrown aside, a day or two afterwards, on the recurrence of sunshine. These changes always augmented the number of new cases, and greatly increased the mortality. Those who had hitherto escaped from attack, and seemed boastfully to calculate on entire immunity, were at such times seized upon, and suddenly hurried to the grave. In numerous instances, also, the disease ran its course more rapidly than at an earlier period.

The *symptoms* observable in this epidemic did not vary, except perhaps in their intensity, from those of ordinary cases of the same disease. A sense of weariness, accompanied with lassitude or languor of body or mind, restlessness, heaviness, and depression of spirits, generally ushered in an attack. Most commonly these were attended with fugitive, or even continued pain in the head, back, joints, and limbs. When in the head, it sometimes seemed intensely concentrated above the supra-orbital ridge; at others it was more diffused through the whole frontal region. The knees would suddenly give way, as if the patient were unexpectedly struck from behind. This was my own case; and I should have fallen had it not been for an object near me, which served as a support. The pain in the back was often more persistent and severe than some of these symptoms, and would not unfrequently continue throughout the whole course of the disease. A creeping sensation, or perhaps a positive chill, with shivering, or more rarely an actual ague fit, would announce its approach, together with loss of appetite and a disagreeable bilious taste in the mouth. These symptoms, so far as I observed, were not generally of long duration, anterior to the full development of the attack. Tenderness of the epigastrium generally accompanied its inroads, and was sometimes increased to a degree of soreness that would not bear the slightest pressure, not even of dress, or the bedclothes. It was usually attended with nausea, eructations, or vomiting. In many cases, the remedies given to arrest this, increased its tendency; they seeming to act upon the tender and inflamed viscus as any other foreign substance, to be ejected as soon as swallowed. In other cases, again, these phenomena did not occur for several hours, or even days, after the commencement of the attack. When the fever was fully established, the face—especially the upper part of it—became flushed, the eyes injected, and, in a few cases, early tinged with yellow. The pulse was characterized by want of vigour and energy; it was easily compressible, and sometimes would entirely disappear under very moderate pressure. It was generally accelerated, rising to one hundred and twenty or thirty. It rarely fell beneath its normal rate at the outset, but afterwards fell to sixty, or even fifty beats per minute. In one instance which fell under my notice, it went down to forty-two. The skin was hot and dry; the mouth and fauces were generally moist, though in some rare instances they were also dry; but, in either case, the thirst was nearly always insatiable. The respiration was hurried, as if the patient were overcome by rapid walking. In most instances, the tongue was uniformly coated white; in others, this was blended with the bilious coating. Flatulency was a marked feature in some cases. The bowels were generally constipated, though in no case which fell under my notice, obstinately so. The appearance of the feces was dark bilious, bronze, or black, extremely offensive, and, after the first discharge or two, small in quantity. The urine was also scanty, though not always deep coloured. Great restlessness and anxiety prevailed in almost every case—increased, in many, to uncontrollable fear and dread. These emotions were uniformly depicted with greater or less intensity on the countenance. Delirium sometimes supervened on the formative stage, but more frequently stupor, with a distressful or apprehensive look.

I have confined this account of the symptomatology of the first stage to the points which fell under my own immediate notice. There may have been other symptoms equally well marked, in individual cases, but I think the above will serve to show with sufficient exactness the general aspect of the onset of the disease in this epidemic. Some of those here mentioned would run through every stage, and end only with the termination of the case; whilst others would subside in from ten or twenty to seventy hours, modified, or enduring with variable intensity, according to the idiosyncrasy of the patient, or the nature of any chronic affection with which he may have been previously afflicted, or to his moral habits—generally proving fatal to those addicted to intemperance, excessive venery, masturbation, and the like. Those debilitated by the latter were especially obnoxious to their force; and of the intemperate, but few escaped, and still fewer survived an attack.

After the symptoms above described had continued from one to three, or perhaps even five days, they took one of two directions; either they subsided, and the patient advanced happily onward to convalescence and ultimate health, or they increased in severity and terminated in death. The intermediate or secondary stage, so precisely defined by some writers as the stage of abatement preparatory to a fresh and more deadly development of the disease, did not form a very distinctive mark in any case which fell under my notice. There were patients who, after the subsidence of the first paroxysm, seemed destined to be restored to health, and who relapsed and died. But their relapse could be traced to adequate causes, and they in no sense seemed to be passing regularly through uniform, successive stages of formation, *abatement*, and collapse. Unless for recovery, the disease did not visibly relax its hold until it laid its victim low. The subsidence of the paroxysm, therefore, was generally a favourable prognostic. When the primary attack pursued a favourable course, the fever subsided in from three to five days—rarely so early as the second day, though cases even of this are not wanting. The skin became soft and moist, or was bathed in a profuse perspiration; the flushed face and injected conjunctiva resumed their natural appearance; the desire for cooling drinks passed away; the accelerated pulse was retarded, and became rather more firm; the headache, pain in the back, and other distressing symptoms, all disappeared. The mind awoke from its torpor; anxiety gave place to a more cheerful and hopeful condition, and the patient was dismissed cured in from ten to fifteen days. In mild cases it might be somewhat earlier, while in very severe cases it might be protracted to one or more weeks beyond this period.

But when the course of the disease was not favourable, and the case ran on to the collapsed state; then, all the symptoms above described became alarmingly exaggerated. Extreme weakness and utter prostration ensued; the pulse became quicker, irregular, and still more easily compressible; the blood ceased to move in the capillaries; petechial spots here and there empurpled the skin, or expanded, in the dependent parts of the body and the extremities, to broad patches, resembling somewhat the vibices of purpura hæmorrhagica; in some severe cases, the vital fluid would burst its lax and feeble barriers, and stain the surface, especially in the parts lined by the mucous membrane. The meatus of the ear, the nasal passages, the gums and other parts of the mouth, the throat, stomach, bowels, kidneys, urinary passages, rectum, and vagina, were all the seats of more or less excessive discharges of blood. In one case that I witnessed, the hemorrhage from the bowels resembled a flooding from the uncontracted uterus, and continued to flow in a copious stream for more than an hour after death. In another case, that of a youth, who came under my own care, hemorrhage of the throat, mouth, and nostrils, persisted daily for more than three weeks, and did not entirely subside until after convalescence was fully established. This was a desperate case, and further remarkable for the thick, dry, almost black coating of the tongue, which was intersected with deep fissures, through which the blood unremittingly oozed. The teeth and bleeding gums were covered with sordes, emitting with every expiration the most offensive odor. After the fifth day, the yellow hue, if present, deepened and overspread the face, extremities, various parts of, or the entire body. Many cases, however, had no tinge of yellow whatever during the whole course of the disease, unless it terminated fatally, when it invariably suffused the entire body. It varied from the ordinary pale bilious hue to the deepest jaundice; in shade not always clear and bright, but as often tawny or dusky. Though the yellow hue of the skin always indicated severity of attack, it could not be regarded as a fatal symptom.[1] The urine, always scanty, varied in colour from a deep orange to dark brown; while the feces took on every shade, from the ordinary bilious stool to the deepest black, often presenting the appearance of tar, and always extremely offensive. Tenderness of the epigastrium, though frequent and intense, was often less prominent than gastric irritability. In the case of one patient, who died of black vomit, very considerable pressure upon the epigastrium was made by me without exciting the least complaint; and yet, everything swallowed by him was instantly ejected. Emesis was frequently unattended by black vomit; but its tendency was to that effect. When this did occur, it usually began with the contents of the stomach slightly clouded; in an hour or two a light brown flocculent matter would appear; this would deepen in colour until the fluid emitted assumed the appearance of weak coffee, and contained brown flakes. This again, if the patient survived long enough, thickened and became still darker, and at last almost of inky blackness. It had a peculiar odour, scarcely describable, but once perceived, never forgotten. A similar odour was sometimes exhaled from the skin in patients without black vomit. Various ineffectual attempts have been made to describe it. Dr. Rush says it resembles the washings of a gun; and he again likens it to the smell of liver of sulphur. Dr. Rochoux regards it as analogous to gangrene. These, and all other similitudes, are but approximations. The odour is *sui generis;* and when a proper name is found for the disease, and applied to it as a prefix, it may be correctly indicated, but it can never be described. Patients having black vomit died in from three to twelve hours after it was fully established. In malignant cases, it often immediately followed the onset of the attack, and the patient would succumb on the third, fifth, or at most seventh day. A few, gifted with extraordinary animal force and mental courage, might protract the struggle a little longer than this, and then yield. Apathy, which characterized the primary attack, soon increased; and the attention, which before might be temporarily excited, totally failed. The patient lay with closed eyes, lethargic, or even comatose. The heart now almost ceased to throb, and the pulse was arrested by the slightest touch. Respiration was slow and laborious; or, in others, hurried, occasionally interrupted by hiccough, sighing, and, if the power and material remained, black vomit. But most commonly, at this stage, the bowels gave way, and frequent discharges of a dark, tarry matter took place. the skin became cold and clammy, and in some cases exhaled the disagreeable odour referred to above; at times it became moist, and the hands and feet shrivelled. While the symptoms of the third stage progressed, some of the patients would exhibit every degree of mental aberration, from the mildest form of delirium to the most uncontrollable, maniacal violence. Thus, while one would lie in passive stupor, with occasional mutterings, and breathe his life out in awful calmness, another would defy the united strength of several to control his motions, or require to be firmly strapped to his bed, while the neighbourhood would resound with his fearful shrieks, until collapse ensued, when his last breath, and the last wave of the life current would fitfully subside, and naught but the saffron corpse remain.

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[1] Dr. Warren, in his treatise of the fever at Barbadoes, attributes the discoloration of the skin not to "a suffusion of bile, but rather to a colliquation, and perhaps a gangrenous diathesis of the sanguineous mass, occasioned by the force of the deleterious venom that had been infused into it."

None of the symptoms, so far noted in this account, essentially, *per se,* predicated death. Patients who have suffered them singly and combined survive, and now enjoy their accustomed health. They were, of course, the exception, not the rule. The ratio of mortality from them varied considerably. For example: I know of but four cases having black vomit which recovered, out of five hundred patients, in whom this phenomenon was present—less than one per cent. A very remarkable case of recovery after black vomit was that of a seamen, who was admitted into the United States Naval Hospital, near Portsmouth. This man was under the care of Dr. Randolph Harrison,[1] who has kindly furnished me with the following particulars: "On the third day of his attack, black vomit made its appearance, and lasted three days. After an absence of two days it again returned, lasting about thirty-six hours; then, after a very dubious existence of a week, he began rapidly to amend. His convalescence continued for eight or nine days, when, from a slight bruise received in the night, the whole forearm became inflamed, pus formed, and the tumour was lanced in five places. The drain from this reduced him to a very precarious state, through which he was carried by stimulants, tonics, and a generous diet. His treatment, during the continuance of the vomit, and for some days after, consisted of large doses of plumbi acetas, by the mouth, and by enemeta; milk, *ad libitum,* and soup enemata." The ratio of recovery from the collapsed state somewhat exceeded this, it being, so far as my observation extends, about five or six per cent. I have heard it stated at twelve or fifteen per cent.; but such is not my experience in relation to it.

There was one symptom from which death could be invariably prognosticated, viz: suppression of urine. It was a certain indication of the general dissolution or breaking up of the animal functions. Perhaps not one patient, certainly not more than one, in whom it occurred, survived. The ratio of cases exhibiting this symptom did not probably exceed ten per cent. It occurred chiefly in the third stage of the disease; and, excepting one case at the Naval Hospital, who survived three days, every patient died within forty-eight hours after the suppression commenced. In every instance, the catheter, when withdrawn, was devoid of the urinous odour, and its punctures were clogged with mucus. Estimating the whole number of deaths at four thousand, and the ratio at ten per cent., the case of recovery above alluded to is one out of four hundred. Dr. Pennell, as quoted by Dr. La Roche, mentions a similar case. He says, out of many hundreds of patients whom he treated, during the epidemic at Rio Janeiro in 1850, he remembers but one instance of recovery in patients with suppression. This is the more remarkable in view of the large proportion of cases in which this phenomenon occurred, which he states to be eighty per cent. of all the fatal cases. Dr. Wragg informs us of fifteen patients whom he treated, having suppression in the first stage of the disease. The suppression persisted for three days, when twelve of the patients died, and three recovered. This remarkable statement is made, it should be remembered, respecting cases in which the suppression occurred in the first stage of the disease, when the patients may be supposed to have been less wasted and broken down by its ravages. Even with these remarkable exceptions, however, suppression of urine still remains the most certain symptom of dissolution; and when it occurs in the final stage, and continues for thirty-six hours, it is the inevitable precursor of that event.

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[1] Dr. R. Harrison had just mailed his letter of resignation as surgeon in the U. S. Navy, when he received orders from the department to repair to the Naval Hospital, in the yellow fever district. He nobly withdrew his resignation, repaired to the post of danger and of honour, and remained on duty throughout the entire epidemic.

The *treatment* of patients in this epidemic was as varied and opposite as the localities from which the different practitioners came. Each proceeded upon that plan, which either had obtained at home, or may have been derived from his own preconceived ideas. But after a few days' experience, and by comparing notes, it finally settled down into some degree of uniformity. The means most in vogue, and which seemed to produce the most favourable results, did not vary from those which obtain in the ordinary epidemics on record. There was, however, one exception to this general remark, viz: venesection. This was universally discarded. A physician who arrived at the infected district, well supplied with lancets, said to me: "When I approached the bedside of my first patient, lancet in hand, I looked, I trembled, and replaced my lancet in its case; nor did I see one patient after this from whom I would have dared to draw blood." Dry cups, however, were sometimes used to overcome local congestion.

The first remedy almost invariably administered, in the first stage, was a brisk cathartic. This generally consisted of ten grains of the mild chloride of mercury, combined with six or eight grains of jalap or rhubarb; followed, in from five to seven hours, with an ounce of the sulphate of magnesia, or castor oil. The oil was preferred by many practitioners; but, in my own practice, the saline cathartic, sometimes combined with senna or magnesia, seemed to act more happily. They were more easily retained, while their refrigerating effects aided in breaking the fever in its formative stage. It occasionally happened, as for example in plethoric patients, when there was absence of nausea, gastric irritability, or but little tenderness of the epigastrium, and when the stomach was charged with ingesta, that an emetic of ipecacuanha most happily preceded the administration of the cathartic. When this could be resorted to, it of course greatly expedited the main object, which was to empty the *primæ viæ* as quickly as possible, preparatory to the exhibition of the sulphate of quinia, and to hasten the mercurial impression. These remedies were, in the opinion of some, the sheet-anchor of hope. In slight cases of irritability of stomach, mustard poultices to the epigastrium, with the internal use of the effervescing draught, would generally be sufficient to allay nausea and distress. But in more severe cases, a fly blister, and the denuded surface sprinkled with the eighth or quarter of a grain of acetate of morphia, would be demanded to effect the desired object. It is needless to remark, however, that numerous cases would defy all attempts to bring them successfully under the healthful control of remedial measures. Supposing the means just indicated to have been effectual, the following treatment seemed to have very favourable results: One or two grain doses of calomel every hour, with or without opium, were administered until its constitutional effects appeared. Salivation being attained—and it was so in three out of five cases—was continued throughout the entire course of the disease. It may be here noted, that while, on the one hand, it was not so difficult to salivate as is stated by some writers, on the other, the assertion that patients, who are salivated in the early stage almost always recover, did not seem to hold good in this epidemic. So little, indeed, was salivation relied upon by some practitioners, that they seldom attempted it; and in the United States Naval Hospital it was, if not entirely discarded, at least of but little repute; while the mercurial plan generally was not held in much greater esteem. Simultaneously with the measures just noted, mustard pediluvia, and mustard poultices to the extremities, were freely used, and often with the most happy effects, so far as relief of the oppressed vital organs was concerned. Many cases occurred, in which the results from these remedies were so salutary as to excite the wish to try the effects of mustard baths to the entire body; but the lamentable deficiency of means for general bathing in the private houses, precluded a fair trial of their efficacy. I feel well persuaded that some valuable lives might have been saved by this means. In many cases, the capillary circulation was so timely restored, and the vital functions relieved, that the patients were enabled to sustain the terrible shock of subsequent paroxysms, and eventually recover. In connection with these stimulating remedies, the Dover's powder was successfully used, where cerebral congestion did not contraindicate it. Ice, iced water, iced tea, lemonade, and other cooling drinks, were always refreshing, and administered with advantage whenever they could be obtained. Sometimes, in spite of advice to the contrary, they were taken in extravagant quantities, and by persons who should not, perhaps, have taken them at all, thereby depressing the tone of the stomach. Several deaths occurred, which were certainly hastened, if not wholly attributive, to excess in this particular. Hemorrhage was happily met and arrested by acetate of lead, administered in two-grain doses every hour or two hours. I have in this way administered sixty or seventy grains with the desired result, and wholly unattended by any bad symptoms. It was also beneficially employed in the way of enemata, and as a gargle and mouth-wash. Creasote and nitrate of silver were effectually employed for the same purpose. If these remedies, and others of a like nature, succeeded, and the first paroxysm subsided, the next step was to nourish and support the system by suitable stimulants and diet. Weak animal broths, eggs, milk, milk and water, milk and lime-water, and farinaceous articles, formed the chief staples of diet; while wine sangaree, bark, carbonate of ammonia, and other tonics, were all employed, in various degrees and modes, to meet the indications arising, and to suit the views of the respective practitioners. But if the disease, instead of abating, as here supposed, multiplied its terrors by taking on the more fearful symptoms of the third stage, extreme weakness, utter prostration, black vomit, hemorrhage, diarrhœa, subsidence of cardiac action, stagnation of capillary circulation, appearance of petechia, cold clammy skin, apathy and collapse—then it became the medical attendant assiduously to linger by the bedside of his patient and redouble his exertions. Increased doses, and in stronger form, of all the ordinary tonics, with wine, brandy, milk punch, and strong animal broths, were then demanded and freely used. When irritability of stomach forbade their administration in the ordinary way, they were given by enemata. Many owe their restoration to health from these desperate circumstances to such assiduous care.

Sulphate of quinia was the most prominent remedy which obtained in the treatment of this disease; the remedy *par excellence* upon which the physician's hope of success most depended. It was regarded by many as a specific remedy, and was accordingly exhibited in every mode—by mouth, by enemeta, and by inunction; and in every degree, from one to one hundred grains. A certain practitioner was accustomed, in certain cases, to repeat a forty grain dose within the twenty-four hours, according to his own statement with favourable results. His professional brethren were not disposed to praise nor imitate his heroism. Quinia, in large doses, has occasionally been effectual in diminishing the frequency of the pulse, and hence has been regarded by some as a sedative. It certainly had this effect in many instances during the late epidemic. Administered in twenty and twenty-five grain doses during the most intense febrile action, it is asserted to have immediately broken down the attack in its first paroxysm. It has also been not less effectual in arousing the torpid energies, when, in the last stage, no other remedy availed. The ordinary exhibition, however, of this medicine was as a tonic, in one or two grain doses every hour or two, or in three and five grain doses, at like intervals, until twenty or thirty grains had been taken. Thus administered, it certainly exceeded in efficacy all the other tonics combined. But though its beneficial results in this, as in every other form of miasmatic fever, is sufficiently demonstrated, I am not prepared to admit, much less affirm, that quinia, or any other known remedy, is a specific cure for yellow fever.

I have before me the notes of a number of cases made at the bedside, but to give them in detail would extend this paper beyond its limits, and we must content ourselves with the general summary of the symptoms and treatment already given.

In concluding this brief account of the treatment which obtained in the late epidemic, I feel constrained to say that the only effectual means of safety from the ravages of yellow fever are—not in medicine, but in HYGIENE. The ounce preventive is here emphatically of more value than the entire pharmacopœia. Remove the known causes; leave nothing for the peculiar, unknown poison to act upon, and epidemic yellow fever is simply an impossibility. I confess, however, that in some localities, this would be more than an Augean task. The only remedy, in such instances, is absolute abandonment of the locality.[1] I have broached the subject of the inadequacy of remedial measures to *cure* the disease for another reason besides its intrinsic truthfulness. Practitioners, from every section of the country, some of them perhaps with but little experience, assemble at any given infected locality. They arrive, each with his peculiar preconceived ideas, and with the full determination to excel all competitors by his heroic performances. The result is, overtreatment. And it is only after the death of three in every four of his patients that the practitioner allows more moderate councils to prevail, and expects less from remedies. To alleviate and control was the aim of the wisest and most skilful; and such was the treatment under which the greater proportion of the survivors recovered.

It is subject of regret that there was little opportunity for post-mortem examinations in this epidemic—at least in Portsmouth. Two causes militated against them. No city hospital was established at this place; in consequence, no doubt, of the humane action of the United States Government, which opened the wards of the Naval Hospital established there. The medical corps of this admirably constituted establishment offered me every facility for making autopsies upon its legitimate inmates of the naval service; but, from obvious reasons, not upon the bodies of deceased citizens. This narrowed down the opportunity to a very small scope, owing to the skill and admirable medical police there. I visited the hospital daily, watchful of every case that was likely to terminate fatally, but without the desired success. Two or three partial autopsies were made by the medical corps of the institution, but, from whatever cause, my request to include an account of them in this essay has not been acceded to. On the other hand, in addition to the natural repugnance to it of the families in town, this sickness inspired such terror that the bodies were often coffined and hurried off to interment while yet scarcely cold, entirely precluding the possibility of making the desired examinations. But one post-mortem was made in Portsmouth; of this there is no satisfactory account. Norfolk, from the facilities which its two temporary hospitals afforded, was much more favoured in this particular than the former city; and it may be that some important statements may yet see the light through the agency of those concerned in the investigations there made.

Having displayed, with as much clearness as the material in hand permitted, the chief characteristics of the late epidemic, it seems proper to note the sanitary lessons it is calculated to teach. If there be any means by which Norfolk and Portsmouth, or any other place obnoxious to the disease, may avert its inroads, they ought to be at once applied. I have expressed it as my decided conviction, that the proper, and only possible means of preventing the terrible ravages of yellow fever, is a strict hygienic system. I use the term in its broadest acceptation, including not merely those objects which are used by man and have a bearing upon his health, but also whatever in any manner relates to the preservation of cleanliness and the purity of the atmosphere. So far as Portsmouth is concerned, it would be extremely difficult, if not impossible, to obviate some of the conditions which militate against good health. The low plateau on which it stands, and water being everywhere abundant a few feet below the surface of the ground, precludes the possibility of proper drainage. There being therefore no receptacle for the waste, offensive waters of the city, it lies in pools, festers, and slowly evaporates, and of course forms one item of contamination of the surrounding atmosphere. Add to this the offal, garbage, and every species of effete matter inseparable from cities and towns, and hourly augmenting, and the difficulties in the way of improving the hygiene, in these particulars, seem sufficiently appalling. Norfolk, as before remarked, has somewhat the advantage of her sister city in these particulars. It rises gently as it recedes from the river, and is susceptible of much improvement in the matter now under consideration, and ought, without delay, to set about the construction of sewers adequate to the complete drainage of the city. But is there no feasible plan to effect the same end in Portsmouth? I believe there is. In all well-regulated cities it is the custom, on stated days of every week, to send to each house, carts, to collect refuse matter, and dispose of it. Portsmouth might adopt this system, and expand it to include all refuse water. Let it be enacted by law, that no person shall throw into the public highways, or private lots or yards, or in any other place within the city limits, any garbage, or animal or vegetable matter whatsoever; or any waste water, or fluid of any kind; but shall preserve it in a convenient vessel until the carts provided by the city shall call and remove it; and let it be the duty of those appointed to collect it, to empty it into the river at a convenient distance from the city. By these means one source of noxious vapours may be effectually disposed of.

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[1] The burning of tar in the public streets has been extensively practised in various places during the prevalence of epidemic yellow fever. This seems to me absurd. If tar be a preventive agent, or even a purifier of the air from the poison of this disease, why are not sailors, who see tar, feel tar, taste tar, smell tar, burn tar, live in tar, and are smeared with it from their tarpaulins to the soles of their shoes, exempt?

Another important step would be to fill up the marshes and small creeks within the city limits. This would be certainly a more formidable task than the former; but nevertheless is equally capable of accomplishment. Art overcomes many of the inconveniences of nature. Rocks, hills, and mountains are laid low, and the valleys are exalted before the steady march of human improvement. But as there are no hills within eighty miles of Norfolk and Portsmouth, whence can materials be procured for the performance of the task suggested? From the sea-shore, in the immediate vicinity of both cities.

Let suitable vessels at proper times be constantly employed in the conveyance of sand, and deposition of it upon the spots indicated. Let neither time nor money be taken into consideration in this work. The season of the year alone should be considered. The work should not proceed during the spring or summer months, since experience proves that the mere upturning of the earth has been productive of epidemic yellow fever; but all the remainder of the year should be employed in it. As a proof of the feasibility of such a task, if any doubt, I would state that material enough, within a short time past, has been removed from the northern section of Manhattan Island, and from the northwestern part of Philadelphia, to fill up the spaces referred to, six times over. And, as an inducement to accomplish the task, I would add, that since Dock Creek, Philadelphia, has been annihilated in this way, no yellow fever has originated or prevailed in that locality. Even during the epidemic of 1820, not one case occurred on Dock Street; although it approached to within a square on one side, and less near on all its other points. I have named the sands of the sea-shore as the proper material, because it is quite as easily obtained as the dredgings of the river lying between the two cities; and the latter being of rich mould, generally composed of organic matter, is of itself pestiferous. Should the task be accomplished, another inexhaustible source of noxious vapour would be forever destroyed; and what would be only second in importance to this, the numerous wooden bridges, and that still more obnoxious mass of decayed wood, the causeway connecting Gosport with Portsmouth, would disappear. And still further, those other masses of decaying vegetable matter, in the shape of rotten logs, and crumbling hulls of vessels, which are laid up on this fermenting plain of mud and filth (to say nothing of its successive crops of slimy vegetation) would all vanish; and these other sources of epidemic disease be also removed.

As a third measure towards a correct hygiene, I would advise the filling up of certain well-known offensive docks, which have long been the pestiferous and death-bearing agents to all whose poverty or avocation obliges them to reside in or frequent their vicinity. And together with them the total destruction of all those filthy, old, dilapidated, tottering tenements which disfigure the fronts of both cities. Water will not cleanse them; human skill cannot repair them; nothing short of utter annihilation will be fully adequate to their effectual removal as seats and centres of epidemic disease. And in providing other places of residence for those who occupy those miserable abodes, care should be taken not to permit too many persons to reside in one house; and further, the tenants should be obliged to observe the rules of cleanliness, both of person and property.

The last, and at the same time one of the most important of these suggestions, relates to the remains of the sacred dead. They can scarcely be said to rest beneath the sod. They lie in tiers; and some of them, from the sad necessity of the case, uncoffined; while but thin strata of sabulous earth separate them from the water below and from the superincumbent air. The average depth of the graves is about four feet—the deepest five; and in many of them three bodies are placed one upon the other. When the summer's sun shall pour its fervid rays down upon this decaying mass, can it be otherwise than that their noxious gases will commingle with the purer air, and sooner or later aid in reproducing other harvests of disease and death. Again, in two cities having a combined population of twenty-seven thousand people, many domestic animals must die annually, whose bodies are hastily and carelessly disposed of; enough certainly to add a very sensible proportion to the many other sources of deleterious air. I am aware that it is affirmed by some, that animal decomposing matter is not deleterious. This is far from being established by sufficient facts. The remedy here indicated is the disinterment of the dead, and their removal to a distance of not less than eight miles from either city. It is the total forbidding of intermural, or even near by suburban cemeteries.

These four are the principal works whose accomplishment is absolutely necessary to the future healthfulness and well-being of Norfolk and Portsmouth; and if they, or their equivalent, are not accomplished, it is unquestionable that sporadic and, at intervals, epidemic yellow fever will continue to repeat its ravages, and heap its hecatombs of human victims upon those whom it has already slain. I have not pressed the point of the minor hygienic rules—cleanliness of house, of person, of lots, of out-houses; the renovation of property within and without; destruction of infected clothing and bedding, or at least the thorough disinfection of them; the abandonment of basements and cellars as places of residence, and many other matters of like import, because these are all either included in the above or will readily present themselves as objects of consideration; and any evils that might arise from a neglect of them must, in many instances, have been already prevented by the appropriate remedies.

The only objection which can reasonably be brought against the measures here suggested is *the cost.* This is unquestionably an important consideration. Scarcely any community in time of health is willing to pay extensively for those works which, in the midst of an epidemic, all agree should have been performed. The outlay necessary for the accomplishment of them cannot but be considerable. But no outlay can be too great in view of the benefits to be derived from them.

There is one question which, before closing this essay, I feel it incumbent upon me to ask. Have Baltimore, Philadelphia, and New York no reason to fear the inroads of epidemic yellow fever?

It has made its appearance on the Atlantic coast as far north as Quebec, and all our Atlantic cities have more or less experienced the deadly influence of its presence. This is especially true of Philadelphia, and though many of the predisposing, or at least inviting, causes do not now exist here to nearly the same extent as they formerly did, yet the late *quasi* epidemic of 1853, in which there were one hundred and seventy cases, of whom one hundred and twenty-eight died, admonishes us that we are not secure from invasion. It is a peculiarly malignant type of the disease which now prevails upon our seaboard. Whether its line of travel be certainly and inflexibly northward, I shall not take it upon me to affirm; but does it not seem so to be?

While it is subject of universal acknowledgment that—in Philadelphia, for example—many of those conditions which are more or less connected with morbific influences in general, and this of yellow fever in particular, have been diminished; that streets have been properly graded; runs, and creeks, and marshes either filled up or converted into well-constructed culverts, and covered over with earth; that frame tenements, with their masses of decayed wood, have been forbidden by law; that means of free ablution have been multiplied; and many other salutary works of a good hygienic police have been inaugurated; nevertheless, much pertaining to a healthful *régime* still remains unaccomplished. Perhaps, too, it is not sufficiently noted that while the present supply of water was ample fifteen years ago, that the increase of population, and especially of the poorer classes, which most need multiplied facilities and encouragement in its use, have so outstripped the provision made for them that, in certain localities, the supply of water is quite deficient.

Let us view the subject from another point of view. And although, for the convenience of illustration, I make Philadelphia the occasion of my remarks, by a simple substitution of name they will be found equally suitable to many of our seaboard towns. We rest in fancied security from the inroads of epidemic yellow fever. Why? Because, omitting the slight threat of 1853, only the oldest inhabitant can say, I have seen such a phenomenon. There has been no epidemic visitation here since 1820, a period of thirty-five years, or before the present generation was born; therefore it cannot again occur. This fallacious hope would have been poor consolation when, on one occasion, it, being absent for forty-two years, returned in 1741 with avenging force; and when, again, after an absence of thirty-one years, it recommenced its ravages in 1793.[1] A protracted withdrawal, therefore, of its unwelcome presence is no ground of security against its return. Cleanliness and a perfect freedom from inviting causes are the only well-founded bases of hope against it. Dr. R. La Roche, in his voluminous digest on this subject, has well expressed the true grounds of apprehension of its return. He says: "Morbid influences which, in other cities or regions, subject the residents and visitors to febrile diseases, and especially to that form of them which constitutes the main object of our inquiries, exist in our midst. They depend on the natural, uneven, and irregular condition of the city plot; on the vicinage of the river side; the peculiar quality, natural and artificial, of the soil, in many parts at least of its surface; the compact construction of the houses; and the narrowness, imperfect ventilation, and filthiness of the streets in certain sections of the city. They arise also from the numerous courts and alleys, many of which are closed at one end, unprovided with a sufficiency of water, imperfectly drained, often unpaved (damp cellars), to say nothing of the piggeries (cow-sheds) and other nuisances they contain; the denseness and squalid character of the population of these localities; the defective mode of construction, and the physical peculiarities of wharves, built of perishable timber, and filled up with animal and vegetable remains and rubbish of various kinds; as well as from the condition of the docks and the proximity of the shipping. Objectionable localities—though more numerous, perhaps, formerly than they are at present—may be found in almost every district, even in the very heart of the city, but abound more in some portions of it than others."[1] The Sanitary Committee of the Board of Health have also recently given, in an official report, a graphic description of the prevalence of incentive causes to epidemic disease. They restrict their account to "a limited district," but it can with certainty be applied to several districts, both of this and the other cities included under this account. The Committee says: "It should not be overlooked that there exists a limited district in one of our suburbs, a locality that is abundantly fruitful in originating or propagating disease; and where at all seasons, winter and summer, spring and autumn, we anticipate its eruption in some frightful or protean form. In this almost isolated neighbourhood we find an excess of a vagrant population, half fed and half clothed, crowded together in almost untenantable houses, and in open and humid cellars, located in narrow streets and narrow alleys, and pent-up courts, badly ventilated and badly lighted. In this forbidding district, we could enumerate many fruitful causes for disease operating upon the half famished and bloated bodies of a depraved and mixed population, whose constitutions have been undermined through the ravages of intemperance and exposure, the accumulation of filth, and impure food and air, accompanied by the far more ruinous effects of a life of moral shame and degradation, become the fit receptacles, and afford the materials for the growth and reproduction of those morbific agents which constitute disease."[2]

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[1] The periods at which yellow fever has successively invaded Philadelphia as an epidemic, are 1699, 1741, 1747, 1762, 1793, 1794, 1797, 1798, 1799, 1802, 1803, 1805, slightly in 1821, and slightly in 1853.

With these agents existing and at work in all our seaboard, what immunity can be expected from invasion should the obnoxious conditions all combine at the right moment for the production of epidemic disease; and who, in all our coasts, shall say this shall not be during the present year or the next? Like causes produce like effects, is a trite platitude, but also a truism under the force of which many a heart has been made sad and many a house desolate.

From time immemorial outbursts of yellow fever have been simultaneous with the arrival of vessels freighted with disease and death. And however those, through whose oversight such mishaps occur, may shield themselves from censure by denying the facts, repeated experience declares the period and the place of their arrival to be that at which the first cases of the disease occur. The commencement of the disease was thus connected in all the West India islands. In 1692, the disease for the first time appeared in Boston simultaneously with the arrival of the fleet of Sir Wm. Phipps, which had contracted it in the West Indies. In 1699, it began its ravages on the arrival of some passengers in the early part of June. In 1702, an epidemic at New York was attributed to a ship from the island of St. Thomas. In 1744, this city had another visitation, which was charged to a similar arrival from the West Indies. The College of Physicians unanimously attributed the great epidemic at Philadelphia in 1793 to importation by some vessels from the same islands, and they instance the fact of its frequent origin through these means in various parts of North America. And finally, not to dwell upon the numerous successive instances of its connection, or simultaneous outbursts, with the arrival of vessels from diseased ports, the barque Mandarin and the steamer Benjamin Franklin bear the blame, whether justly or not, for bringing it, in the first instance, into Philadelphia in 1853, and, in the second, into Portsmouth in 1855. In every instance the peculiar poison of yellow fever found the corresponding elements ready for action; and should these again concur in any given place, nothing will save the inhabitants from this most deadly pest. The question, then, is not for how long a period an epidemic may have discontinued its ravages, but what is the hygienic condition of each particular city or town. Let the boards of health, then; let the various medical bodies, individually and collectively; let our city councils, and all in authority; let our police, and let every private citizen, in all our seaboard towns, as far north at least as Boston, see to it now that their cities are in a cleanly condition; that they have plentiful supplies of water appropriately used; that all nuisances are removed; that all offensive manufactories either abate the offence or be transferred into the rural districts; that ponds, marshes, pools of stagnant water, sinks, common-sewers, docks, privies, closely built courts, garbage, dead animal bodies—in a word, everything which can by any possibility provoke, aid, or abet epidemic disease, be thoroughly and entirely removed, or otherwise remedied. We may then, and only then, confidently expect a continued immunity from epidemic yellow fever; and this, whether the theory of importation or of local origin be the true one.

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[1] La Roche on Yellow Fever, vol. i. pp. 31–2.

[2] Report of joint committee, p. 36.

ART. II.—*On "Chagres Fever" and some of the other Diseases to which California Emigrants are liable.* By WM. P. BUEL, M. D., Surgeon Pacific Mail Company.

OF the vast multitudes who, since the years 1847 and 1848, have found their way from the older States of the confederacy to the shores of the Pacific, by far the largest portion has passed by the Isthmus of Panama. The remainder, which made the transit by the Nicaragua route, have been subjected to substantially the same class of diseases. Lying a few degrees further north, but still within the tropics, the sources of disease on the two routes cannot essentially differ. My personal observations and experience have been confined to the Panama route, and to that alone will my remarks immediately apply. With regard to the two other methods of reaching the Pacific—the one by a protracted sea voyage, and the other by a long and perilous land journey across the Rocky Mountains and the sandy deserts which lie at their base—the mortality, which, from disease, has been comparatively trifling, though by other perils, both by land and sea, it has been considerable, does not obviously form a part of the present discussion.

Large bodies of persons, mostly from northern and temperate climates, unaccustomed, for the most part, to the excitement and vicissitudes of travel, lured by the golden rumors which reached them on every breeze, have been tempted to a sudden and violent disruption of those ties which bind men generally to the locality or neighbourhood of their birth. After a preliminary journey of hundreds, perhaps thousands of miles, to their port of embarkation, they find themselves huddled into crowded ships, and are, in a few days, transferred into the bosom of the tropics. The Atlantic portion of the journey terminated, another brief space finds them set ashore upon the Isthmus of Panama.

To cross that "narrow neck of land" was, until quite recently, especially during the rainy season, a perilous and toilsome enterprise. The emigrant was exposed by day alternately to drenching rains and to the scorching beams of a vertical sun; at night, to damp and sickly exhalations. He had little protection from the weather, and often was obliged to camp out, to sleep on the ground in the open air. Add to these, bad diet, indulgence in tropical fruits, and the liberal use of intoxicating liquors, always bad, and he could hardly be expected to escape disease. The wonder is, not that multitudes perished, but rather that any escaped.

I presume there are portions of the intertropical regions more insalubrious, and more destructive to human life, than the Isthmus of Panama. Such, probably, are the slave coast of Africa, the swamps of Guiana, and the city of Batavia, in the East Indies.

The isthmus contains in abundance those elements which everywhere generate disease—exuberant vegetation, stagnant water, and intense heat.

The native inhabitants of the isthmus are such as might be looked for in such a climate; an indolent, sickly, effeminate race, destitute of physical development, without energy of mind or body. Placed upon a soil of boundless fertility, they gain from it only a bare subsistence, which spontaneous nature yields them almost without effort of their own. Very few natives of northern regions can endure the climate any considerable time, without their constitutions being undermined or destroyed. The more hardy and vigorous resist it for a time, suffering occasional attacks of fever with intervals of health; but the sickly hue and bilious complexion of most northern residents, show too plainly the malign influence against which they struggle to live. Even old residents of other tropical climates are not proof against it. I know a French gentleman, who had lived for fifteen years on the island of Cuba, where, after having passed through a seasoning of the yellow fever, he enjoyed good health. Having to visit San Francisco on business, he was detained *en route* at Panama for two or three weeks. He had, in consequence, an attack of fever, from the effects of which he did not recover for several months. Still, the city of Panama is the healthiest spot on the isthmus. Of the foreign resident population, a portion enjoy tolerable health, but do not escape, with rare exceptions, occasional attacks of fever. The location of Panama is healthy, having a dry soil of no great depth on a rocky substratum, washed on three sides by the waters of the Pacific. It might, with proper sanitary regulations, be rendered one of the healthiest of tropical cities.

That form of febrile disease to which the names of isthmus fever, Panama fever, and Chagres fever have been indiscriminately applied, is by far the most common result of exposure to the malaria of the isthmus. Diarrhœa, dysentery, and a peculiarly obstinate form of colic, are also among the ordinary resultants of the same exposure. A few remarks will be offered upon each of these several forms of disease, as they have presented themselves to my observation during an experience of several years on the Pacific coast.

Panama fever belongs to that numerous progeny of disease everywhere engendered by decaying vegetation, stagnant water, and a high temperature. Modified to a certain extent by local causes and other circumstances, they all bear to each other a strong family resemblance. Whether deriving their popular or technical appellations from certain peculiarities of form or feature—as bilious, intermittent or remittent, tertian, quartan, or quotidian—or from particular localities, as Panama fever, African fever, &c.—they all possess many features in common, and require substantially the same modes of treatment.

Panama fever, in its chronic form and more advanced stages, is a familiar disease to most physicians in our maritime cities, particularly to those engaged in hospital practice, and needs no description at the present time. Its incipient and formative stages are, however, less familiar, except to those who have witnessed it at or near the spot where it originates. An incubative interval of several days, usually not less than a week, elapses between the time of exposure and that of development. On board steamers leaving Panama for San Francisco, this is about the period usually occupied in arriving at Acapulco, coaling, and getting to sea again. Cases of fever begin to occur in considerable numbers within two or three days after leaving that port. Upon the *post hoc, ergo propter hoc* principle of induction, this is often ascribed to imprudences in Acapulco, indulgence in fruit, exposure to the sun, &c. These may act in certain cases as exciting causes, but I apprehend the same or similar results would occur about the same time, if the steamers did not touch at Acapulco at all.

Symptoms.—The patient experiences, for two or three days previous to the attack, a general soreness and tenderness in all the muscles and integuments; with loss of appetite and debility, but does not imagine himself seriously ill. He is next attacked with severe frontal headache, pains in the lumbar region, in the epigastrium, and in the extremities. There are usually more or less of catarrhal symptoms, coryza, sternutation, &c. The patient now generally applies for medical aid. He thinks it probable, from the coexistence of the catarrhal symptoms, that he has taken cold from sleeping on deck a night or two previous. The first attack is not usually ushered in by a regular ague, though the patient often complains of feeling chilly. He has a peculiar anxious expression of countenance, and a contracted brow, which, to a familiar observer, are almost diagnostic of the disease. His tongue is moist and but slightly coated. His pulse soft and compressible, and not usually more than ninety in frequency. There is usually, though not invariably, a rather sluggish condition of the bowels. The headache is the most severe symptom under which the patient suffers. The pain is often infra-orbital, and seems to be seated in the nervous ganglia located there. It appears, then, that the first invasion of the disease is upon the nervous system and the great nervous centres—the brain, the spinal marrow, the large nerves of the limbs, and the epigastric and infra-orbital ganglia. The functions of secretion and circulation are in the first instance but slightly affected. The heat of the surface is not much increased, and the skin is often moist throughout. Frequently there is profuse perspiration.

In this formative stage of the disease, without resorting to any preliminary treatment whatever, the prompt administration of ten or fifteen grains of quinia, in a single dose, is followed by almost immediate relief. The severity of the headache, and other nervous pains, is at once alleviated. The countenance of the patient loses its anxious expression, the contracted brow becomes dilated, and his whole aspect indicates that a favourable change has occurred. The repetition of the quinia in the same quantity, at intervals of twelve or twenty-four hours, for two or three times, is followed, in almost all cases, by the disappearance of all the symptoms, and a complete restoration of health, with the exception of some remaining debility.

If the bowels of the patient should remain constipated, the administration of a mild cathartic, as a Seidlitz powder, or a small dose of oil, contributes to his comfort. The quinia, however, in full doses, frequently acts on the bowels, and, when that is the case, no other medicine will be required. If the practitioner, ignorant of the disease he has to treat, or guided by preconceived notions or prejudices, should commence the treatment by administering emetics, or large doses of mercurial cathartics, instead of any alleviation of the symptoms, he will find them all greatly aggravated. A continuance of that method of treatment would be followed by serious, if not fatal, consequences. Some few years since, a steamer left Panama for San Francisco with about forty passengers on board, who had been detained for a fortnight or more on the isthmus. Soon after leaving port, nearly all of them sickened with the fever. The surgeon in attendance, having had no experience in this form of disease, and ignorant of the proper remedies, treated all his patients with emetics and mercurials without quinia. The result was, that fifteen of the forty passengers perished before the steamer reached Acapulco.

In patients of a highly nervous temperament, the frontal and infra-orbital headaches are often severe, sometimes excruciating. In such cases, the most prompt and immediate relief is produced by administering morphia in combination with quinia. The anodyne influence of the morphia relieves the pain almost immediately, before the quinia has had time to produce its specific effects, and without in any way impairing the efficiency of the latter remedy. In many cases, where the headache has been severe, the combination of half a grain to a grain of morphia with the quinia, produces the happiest effects. Nor have I been deterred from the use of it, or seen any ill consequences resulting, even when the febrile excitement was very considerable, the face flushed, and adnata injected, provided only the tongue was moist. Careful reference must of course be had, in administering a remedy of such great power, to the age, constitution, and previous habits of the patient.

In the treatment of Panama fever, the diffusible stimulants are sometimes useful adjuvants to the quinia. They are tolerated not only without any increase of the febrile excitement, but often with the contrary result. In cases attended with unusual debility they may be given freely, and with excellent effect. I have even known cases where, from some peculiarity or idiosyncrasy, the frontal headache would not yield to quinia, when it disappeared immediately under the free use of wine. In the treatment of patients who have been free livers, and habitually addicted to the use of stimulants, it will not be safe to discontinue them during an attack. They must be continued throughout the treatment.

Young children, and even infants, are frequently subjects of Panama fever, and it is apt to be more obstinate and unmanageable in them than in adults. This is owing, in part at least, to their greater irritability of stomach, and the consequent difficulty in the administration and retention of a remedy so unpalatable as quinia. To children of one or two years, I have given the remedy in the form of a syrup, in doses of one grain every two hours. It is occasionally rejected; but, in most cases, sufficient will be retained to produce the requisite effect. I have found the solution of quinia, made with tartaric acid, less nauseous and easier of retention than the more common solution with sulphuric acid. The symptoms are usually arrested in two or three days, by this mode of treatment, though obstinate cases are occasionally met with, requiring more time. As in young children we have no *subjective* symptoms to assist our diagnosis, and have to depend solely upon those which are *objective,* the disease is necessarily more obscure and less *pronounced* than in adults. The little patient droops, and loses his appetite and spirits. His skin becomes of an ashy complexion, without much increase of temperature, and generally retains its moisture. The tongue is slightly cooled, and the pulse a little quickened. If, under these circumstances, we should ascribe the difficulty to bilious or gastric derangements, and proceed to administer mercurials in purgative or alterative doses, instead of any improvement in the symptoms, we shall find only an aggravation, and a persistence in the treatment would be followed by fatal consequences. Here, as in older subjects, the quinia should be administered at once, and without any preliminary treatment. In consequence of the necessary minuteness of the doses, the improvement may not be as prompt, but it will, in most cases, be equally certain.

After the abatement of the symptoms by the use of quinia in free doses, and after convalescence has begun to be established, it will not be safe suddenly to discontinue the remedy. It should still be administered in reduced doses, for a number of days, otherwise we may look for a second attack, after the lapse of two or three weeks. It is often useful to combine it with iron, either in the form of citrate or sulphate. After a severe attack, the consequent debility is sometimes very great. In this stage, good India ale or sherry wine come in very well to assist in establishing the convalescence.

There is existing in the public mind, to a considerable extent, a popular prejudice against the use of quinia, and numerous ill consequences are imputed to it, which are either altogether imaginary, or the results of the disease for which it is administered, and not of the remedy itself. I have had occasion to use it in large quantities, and in a great number of cases, and I cannot call to mind a single instance in which any permanent ill consequences have been the result. The ringing of the ears, and other unpleasant sensations in the head, produced by large doses, are of very transient duration. It is the antidote which nature has provided for the poison, whatever it be, which produces miasmatic fevers, without which large portions of the earth would be uninhabitable, which now sustain a considerable population. I know of no more triumphant exhibition of the power of medicine in curing disease than the complete mastery which quinia exerts over Panama fever and its cognate diseases; and while on this part of my subject, it is not out of place to remark that the diseases met with on the Pacific coast are very generally of an asthenic character, requiring a tonic and stimulant mode of treatment, and very intolerant of the lancet or depletory remedies of any kind. It was a shrewd maxim of one of the old masters, "*in dubio suspice venerem;*" and it may be safely said, in reference to these diseases, "*in dubio suspice quiniam;*" or at least suspect its necessity. In cases where, from the neglect of proper treatment at the outset, Panama fever has assumed a chronic form, with gastric and hepatic complications, it may be necessary to resort to mercurials in alterative doses; but even then with great caution, and constant reference to the original type of the disease as essentially asthenic.

Diarrhœa and *dysentery* have, in some seasons, prevailed to a very considerable extent on board the Pacific steamers, and numbered, in former years, many victims. Indeed, the principal portion of the mortality among the emigrants has been caused by one or the other of these diseases. These are marked by no peculiarities of feature differing from the same forms of disease prevailing elsewhere, except a greater degree of intensity, and less amenability to treatment than the diarrhœas and dysenteries of more temperate regions. The former disease, if taken early, generally yields to doses of calomel and opium, followed by castor oil. Where this treatment failed, an astringent pill of acetate of lead, combined with ipecac. and opium, would often control or arrest the discharges. Some obstinate cases, however, resist all kinds of treatment, and either assume a chronic form, gradually exhausting the patient, or else show a choleraic tendency, and terminate in collapse.

Dysentery is by far the most obstinate and uncontrollable disease encountered on the Pacific coast. A portion of the cases yield readily to calomel and opium, or calomel and Dover's powder; but many others resist with great pertinacity every form of treatment that has been devised. Mercurials in small doses, guarded by opium, frequently repeated until slight ptyalism was produced, has been found the most successful. If the system could be brought under a mercurial influence, the symptoms invariably yielded. Cases in which this could not be accomplished, were very apt to be fatal. Nitrate of silver, either separately or combined with opium, administered by the mouth or *per anum*, was fully tested, but without the happy results which some have derived from it. When thrown into the rectum with an ordinary syringe, it cannot penetrate very far into the bowel, and unless the seat of disease be within a few inches of the anus, can have no curative effect. The same remarks apply to sulphate of copper. Under the old hypothesis, that dysentery is but a fever "turned in upon the bowels," the attempt was often made to combat the symptoms with quinia. No success, however, followed this mode of treatment, and it was abandoned.

A very severe form of *colic,* with *obstinate constipation,* was formerly very prevalent. It did not attack so frequently the passengers as it did the employés in the engineer's department, especially the firemen and coal passers. It was so common among them as to be called the "fireman's colic." A severe, deep-seated pain in the region of the colon, and an obstinate constipation, which resisted every form of cathartic medicine, mineral, vegetable, and saline, per *os* and per *anum*, day after day for days together, were the prominent symptoms. The free use of calomel, carried to the point of salivation, was always attended with a remission of the symptoms; but the quantity required was so great that severe mercurial stomatitis and ulceration were a frequent consequence. The disease resembled lead colic in many of its features, and it is not improbable that lead had at least some agency in it. The condensed water from the boilers was at one time extensively used for drinking and culinary purposes, and as a part of the process was performed in lead pipes, the idea seems highly probable, though no lead was ever detected in the water.

Besides those forms of disease which prevail more or less at all times on board the Pacific steamers, and may be considered *endemic*, there have been, since the commencement of the emigration, several outbreaks of *epidemic* disease. The first, and most fatal one which has ever occurred on the Panama route, happened in the month of August, 1850, on board the steamer Panama, on her downward passage from San Francisco. The steamer left that port with about five hundred passengers. They were generally healthy till after the arrival at, and departure from, Acapulco. It is believed they committed some excesses while in that port. A day or two after leaving it, cholera, in a very malignant form, broke out, and before they reached Panama swept off one hundred of the passengers. A large number more perished in the transit of the isthmus; so that it is believed that not much more than half the number who left San Francisco reached New York alive. A more fearful mortality has probably never occurred. The panic on board the vessel is represented as having been terrific, and probably many died from simple fright.

In the month of December, 1852, the yellow fever prevailed in the Island of St. Thomas, W. I. The British mail steamer from Southampton to Panama touched at that island *en route.* After leaving it, the yellow fever broke out among the passengers, and continued to prevail after their arrival upon the isthmus. A considerable number of cases made their appearance in the city of Panama, and of a very malignant and fatal character. The steamer Oregon left Panama for San Francisco the latter part of the same month. Her passengers had been detained some days on the isthmus. Soon after leaving port, numerous cases of fever occurred among the passengers. At the outset, they did not appear to differ materially from ordinary Panama fever. They were treated in the usual manner with liberal doses of quinia. At first, the symptoms would appear to yield; but, after a day or two, the remedy seemed to lose its power, and all the symptoms to become aggravated. On the fifth day out, several passengers who had been thus affected were seized with black vomit, and died in the course of a few hours. Afterwards, other cases of the same kind continued to occur, until there were in all fifteen deaths. There were about a hundred other cases of fever which did not assume this type of malignity, and all recovered. The ship was very much over-crowded with passengers, and it was a matter of surprise that the mortality was not very much greater. *Not a single case of malignant fever occurred among the crew,* *or any of the regular employés of the ship.* An instance occurred, some two or three years since, in which the circumstances were completely reversed. A vessel left New Orleans with passengers bound for New York, when the yellow fever was prevailing at the former port. A few days out, the fever broke out among the crew, and carried off two-thirds or more of their number. The weather was very rough, and the passengers *very sea-sick;* but none took the fever. A newspaper commentator, remarking upon these facts, deduced the inference that sea sickness is a prophylactic against yellow fever. On board the Oregon, on the occasion described, many of the passengers suffered severely with sea-sickness, and the sea-sickness, instead of affording any exemption, was followed, in several instances, by black vomit, and death in a few hours.

All the steamers leaving Panama, at and for some weeks subsequent to this period, had yellow fever on board, and in several the mortality was much greater than in the Oregon.

In the summer of 1854, malignant cholera prevailed in the cities of New York and New Orleans; and during the latter months of the summer, cases of the same disease occurred on board the Pacific steamers. The mortality was, however, never great, in proportion to the number of passengers carried.

During the summer of '55, cholera has prevailed with great fatality on board the steamers connected with the Nicaragua route. The steamers by the Panama route have been entirely exempt from that and all other forms of severe disease. In fact, since the Panama Railroad has been completed, and passengers transported across the isthmus in a few hours, without fatigue and exposure, instead of being exposed to both for days, as was the case previously, disease has almost entirely disappeared from the Panama route. I find, by recurring to my hospital register, that on board the steamer Sonora, for the year 1855, during which the railroad has been operated over the whole route, the whole number of deaths among seven or eight thousand passengers transported has been but eleven from all causes, and of this small number all but one or two have been the result of casualties, or else of chronic disease, under which the patients were suffering when they came on board.

PANAMA, N. G., *January,* 1856.

ART. III.—*On the Decomposition of Iodide of Starch by the Animal Fluids.*

By JOHN C. DALTON, Jr., M. D., Professor of Physiology in the College of Physicians and Surgeons, New York.

SOME months since, while experimenting on the digestion of starch, and its conversion into sugar in the intestine, I observed that the iodide of starch became very rapidly decolorized on being digested, at the temperature of

100° F., with the intestinal fluids taken from the duodenum of a recently killed dog. It appeared, also, that this effect was produced some time before any sugar had made its appearance in the mixture, and would even take place, with nearly equal promptness, at the ordinary temperature of the air. It seemed, at first, probable, that the decolorization was owing to a partial alteration of the starch, which passed into an intermediate condition, before undergoing its final conversion into sugar. Subsequent examination, however, showed that it was due to a simple decomposition of the iodide of starch by the organic substances of the intestinal fluids. Nearly all the animal fluids, indeed, when in a fresh condition, not only decolorize, more or less promptly, the blue iodide of starch, but prevent entirely the usual reaction between starch and iodine, when this latter substance is present in small quantity. When the iodide of starch, ready formed, comes in contact with these fluids, the iodine leaves the starch and combines with the organic matters; and it is under the form of such an organic combination that the iodine is absorbed from the intestine, passes through the circulation, and is discharged by the urine. The precaution, therefore, which is sometimes inculcated, in the administration of free iodine, to give the medicine in the interval between two meals, lest it should combine with the starchy matters of the food, and become insoluble and inert, is altogether superfluous; since starch cannot retain the iodine in combination with it, in presence of the digestive fluids.

The iodide of starch, in the form of a paste, has, indeed, been occasionally recommended as one mode of administering the drug; but I am not aware that the mode in which iodine, in this state of combination, becomes absorbed, has yet been directly investigated.

The solution of starch employed in the following experiments, was made by boiling five grains of starch in the ounce of water, and allowing the fluid to cool. The experiments were all made at the ordinary temperature of the atmosphere.

1. If ʒi of *saliva* be mixed with ʒi of iodine water, and ʒss of the starch solution added, no blue colour is produced; but a drop or two of nitric acid immediately turns the mixture blue and opaque.

ʒi of iodine water is added to ʒi of the starch solution, making an opaque blue fluid; ʒii of saliva are then added, and the whole shaken up. The mixture becomes nearly colourless at the end of five minutes. The blue color is then restored by a drop or two of nitric acid.

2. If ʒi of iodine water, with ʒi of starch, be mixed with an equal quantity of fresh *pancreatic juice* (from the dog), the blue colour is entirely dissipated in less than one minute.

3. Light yellow, nearly clear *bile,* from the dog's gall-bladder, destroys immediately the blue colour of an equal quantity of starch and iodine water.

On the addition of nitric acid, the blue colour is restored, modified somewhat by the green tinge which the bile takes with nitric acid.

4. A healthy dog, kept for 24 hours without food, was killed by section of the medulla, and the scanty, light yellowish, frothy *fluid of the small intestine* collected. It decolorized immediately the blue iodide of starch, made in the above manner, and the blue colour was restored by nitric acid.

A dog was kept for 24 hours without food, then fed with fresh lean meat, and killed half an hour after feeding. The intestinal fluids from the upper half of the small intestine acted on the iodide of starch in the same manner as in the last experiment.

5. If ʒij of the clear yellowish *serum of the blood* (horse's blood) be added to ʒij of iodide of starch, the mixture loses its blue colour immediately. It is brought back by nitric acid.

6. If ʒi of healthy human *urine* be added to ʒi of iodide of starch, the mixture is decolorized in five seconds. The blue colour is restored by nitric acid.

The above effect is produced whether the urine be acid or slightly alkaline in reaction.

ʒi of urine mixed with ʒv of iodine water effectually prevents the reaction between the iodine and starch.

7. The *gastric juice* acts differently, in this respect, according to circumstances. If taken from the stomach of the fasting animal (by irritation, through a gastric fistula, with a metallic catheter), it is clear and colourless, and does not interfere at all with the reaction of starch and iodine. But that which is collected during the first half hour after feeding the animal on cooked meat, and which is slightly yellowish in colour, and contains a little albuminose in solution, interferes with the reaction very perfectly. ʒi of such gastric juice decolorizes an equal quantity of iodide of starch in less than a minute.

A specimen of such gastric juice, however, containing a little albuminose, which had been kept for some months, was found to have lost almost entirely its power of preventing the union between starch and iodine.

If the colourless gastric juice, taken from the fasting animal, which has no effect on the iodide of starch, be digested for an hour at the temperature of 100° F., with finely cut boiled meat, and then filtered, the filtered fluid interferes with the reaction of iodine and starch, like the other animal fluids.

The iodine, in these cases, probably combines, as already intimated, directly with the organic (albuminoid) matters of the animal fluids, and is detected by starch only after these organic matters have been destroyed by nitric acid. It is not, however, easy to demonstrate this. If the serum of the blood, for example, be boiled with an excess of sulphate of soda, by which all of the albumen, and most of the other organic substances are coagulated, the clear filtered fluid interferes with the reaction of starch and iodine as before. It might be supposed that the iodine, on the contrary, was converted into an iodide of potassium or sodium, under the influence of the alkaline carbonates, and that it passed, under this form, through the circulation and into the excretions. Several circumstances, however, are opposed to this view. First, the iodide of starch is decomposed, not only by the saliva, serum of the blood, and pancreatic juice, which are alkaline; but also, quite as promptly, by the urine and gastric juice, which are acid in reaction. Secondly, the gastric juice, as already mentioned, has no power of preventing the union of starch and iodine, when taken fresh from the stomach of the fasting animal, but yet gains this power in a high degree when artificially digested with meat at 100° F. It seems nearly certain, therefore, that the iodine combines, in this instance, with some of the albuminoid matters dissolved by the gastric juice.

This reaction of iodine with the animal substances is further illustrated, in a very striking manner, by the following experiments, performed at the suggestion and with the assistance of my friend, Dr. Wm. H. Ellett:—

I. If a mixed solution of boiled starch and iodide of potassium be spread upon the surface of the skin, and the two poles of a galvanic battery applied to the moistened surface a short distance from each other, no perceptible discoloration appears, provided the galvanic current be not very powerful; while if the same poles be applied to a piece of bibulous paper, moistened with the same solution, the blue iodide of starch appears at once at the positive pole.

II. If the negative pole of the battery be placed in contact with the bibulous paper, moistened as above, the positive pole taken in the left hand, and the circuit completed by touching the bibulous paper with the right forefinger, the shock is felt, but no discoloration of the paper is produced; but if the circuit be completed by a steel needle, held in the right hand, a dark stain immediately appears on the paper.

III. The negative pole was placed in contact with the moistened paper, and a fresh piece of animal membrane (uterus of the cow) attached by one end to the positive pole. The other end of the animal membrane was then cut to a fine point, by which the circuit was completed on the paper; but no stain occurred. A steel needle was then thrust through the animal membrane, and the circuit completed by the point of the needle, when the discoloration of the paper immediately appeared.

It appears, then, that whenever iodine is set free from its combination with potassium, in presence of starch and an animal organic substance, either living or recently dead, it combines with the organic substance in preference to uniting with the starch.

The influence of the animal fluids in preventing the mutual reaction of iodine and starch is, as might be expected, not unlimited, but depends on the relative quantities of the iodine and the organic substance with which it combines. If there be but little iodine present, it is all taken up by the organic substance, and shows no reaction with starch; while, if present in large quantity, it attacks the starch also, and produces the characteristic blue colour. Thus, one drachm of iodine water, mixed with one drachm of gastric juice holding albuminose in solution, has no reaction on starch; but a mixture of two drachms of the former to one drachm of the latter, strikes with starch a perceptible blue colour. A single drop of the alcoholic tincture of iodine, mixed with one drachm of gastric juice, is sufficient to produce a blue colour with one drop of the starch solution. Other animal fluids, however, appropriate larger quantities of free iodine. Two drops of tincture of iodine, for example, are completely saturated by one drachm of healthy urine, so that the mixture gives no reaction with starch; three drops give only a purplish colour, while four drops strike a deep blue colour on the addition of starch.

With the adoption of proper precautions, the reactions described above will not expose us to any serious error when endeavouring to ascertain the presence of either starch or iodine in the animal fluids. In testing for iodine, we have only to add a little nitric acid after dropping in the starch; and in testing for starch, we should be sure to add iodine enough to more than saturate the albuminoid substances present. It is at least evident, however, from the foregoing facts, that iodine cannot possibly exist in a free state in the animal fluids, but is always in either a metallic or an organic combination.

ART. IV.—*Urological Contributions.* By WILLIAM A. HAMMOND, M. D., Assistant Surgeon, U. S. Army.

IN the *American Journal of the Medical Sciences* for January, 1855, I gave the results of experiments, instituted with the view of determining the relations existing between urea and uric acid. Those experiments showed conclusively that physical exercise augments the quantity of urea excreted, and, at the same time, diminishes the amount of uric acid; and, on the other hand, that a state of almost complete inactivity produces directly contrary effects. The investigations referred to, therefore, went to prove that, under the conditions stated, these substances, as regards quantity, stand in an opposite relation to each other, and thus supported the theory of Liebig, which ascribes the formation of urea to the continued oxidation of uric acid.

It was also demonstrated that by the respiration of oxygen in a greater state of purity than atmospheric air, urea can be formed in animals which do not ordinarily excrete it.

In the present paper I purpose giving the details of a more extended course of experiments, undertaken with the twofold object of testing the correctness of conclusions arrived at by other inquirers, and of throwing, if possible, some additional light upon the physiology of that important fluid, by which the greater portion of the worn-out materials of the body is removed from the system.

The influence of mental exertion on the metamorphosis of tissue, as exhibited in the composition of the urine, though generally admitted by physiologists, seems almost to have escaped the attention of recent investigators. If every thought emanating from the brain is to be regarded as involving the decay of a certain amount of cerebral substance, it surely becomes a question of great importance to ascertain in what manner the urine (a secretion formed essentially from the decomposition of the effete tissues of the body) is thereby affected. It has long been known that continued mental labour, and certain emotions of the mind, very materially increase the amount of phosphates eliminated by the kidneys; but, with the exception of Mosler's experiments (referred to in the *British and Foreign Medico-Chirurgical Review*, January, 1855, p. 202), I am not aware that any investigations have heretofore been instituted with the object of determining the effect produced upon the other constituents of the urine, by psychological influences.

The experiments of Mosler, above alluded to, have very little bearing upon this point, except as regards the phosphates, which he found were regularly increased one-half by intense mental occupation. He further ascertained that, by an abundance of proteinaceous food and increased intellectual exertion, the urea and chlorine were also greatly augmented in quantity. As Lehmann has definitely shown, that a full nitrogenous diet increases the amount of urea excreted, it is impossible to say how much of the effect in Mosler's experiments is to be ascribed to the intense mental occupation, and how much to the excess of protein which he had taken into his system.

In the present article I design showing, to some extent, the effect upon the urine of increased and diminished mental exertion.

Böcker, Zobel, Julius Lehmann, and others have recently investigated the effects of tea and coffee upon the human system. These substances, forming so universally a part of the food of man, would seem to be pointed out to him by an instinct even more powerful than reason. It is of great importance to ascertain with certainty their action upon the human economy, and any experiments calculated to enlarge our knowledge upon this point, cannot but prove serviceable to the cause of medical science.

I purpose, therefore, considering in this paper the effects of tea and coffee upon the urine, and incidentally upon the system generally.

The investigations detailed, are accordingly embraced under two heads:—

1st. The urine, as affected by increased and diminished intellectual labor.

2d. In its relations to certain articles of human consumption, tea and coffee.

As all the experiments under these heads were performed upon myself, it was easy to obtain standard amounts of the several constituents of the urine, with which to compare the results to be derived from each series of observations. I, therefore, reduced my food, mental labour, and physical exercise to a system, appropriating eight hours to sleep, three to bodily exercise, seven to study, and six to recreation, eating, and the performance of daily duties, requiring but little mental or physical exertion. During the twenty-four hours, I consumed sixteen ounces of fresh beef (broiled and roasted), twelve ounces of bread, one ounce of butter, eight ounces of potatoes, and two drachms of common salt. In the same period, I drank thirty-two ounces of water. No other food, solid or fluid, was taken into the system.

This course was, in fact, absolutely necessary to exactness, as the ordinary variations in food and exercise would very materially have influenced the results.

It may be important to state that I am twenty-seven years of age, and at the time these experiments were commenced, weighed two hundred and five pounds.

Under the several conditions of food, exercise, &c., above specified, I examined, on ten consecutive days, the total amount of urine excreted during each period of twenty-four hours, taking note of the quantity and the amount of urea, uric acid, chlorine, and phosphoric and sulphuric acids, respectively. I divided the whole quantity of urine, after accurately measuring it, into five equal parts. From one of these parts the urea was determined, and from the quantity obtained, the total amount was calculated; from another, the uric acid, and so on, with each of the other constituents. The results of these analyses are given in the following table. The quantity of urine is expressed in ounces, and decimals of an ounce; the weights of the several constituents are given in grains and decimals of a grain. This system is adhered to throughout.

The mean temperature of the atmosphere, for the ten days of these experiments, was 84° Fahrenheit.

	Quantity.	Urea.	Uric acid.	Chlorine.	Phosphoric acid.	Sulphuric acid.
1st day . . .	35.60	669.10	14.90	153.37	43.27	37.12
2d day . . .	34.32	667.45	15.55	150.43	42.52	36.15
3d day . . .	37.75	671.06	14.16	157.08	44.74	39.10
4th day . . .	36.23	671.19	14.70	155.20	43 07	38.43
5th day . . .	34.17	666.22	15.23	150.58	42.64	36.45
6th day . . .	36.81	668.81	14.77	154.63	43.18	38.26
7th day . . .	38.06	673.90	13.51	157.17	44.50	40.60
8th day . . .	37.29	672.16	14.04	156.11	44.00	39.05
9th day . . .	37.36	672.28	14.02	155.31	44.19	39.14
10th day . .	38.00	674.09	13.58	158.16	44.56	40.41
Average	36.55	670.62	14.44	154.80	43.66	38.47

In these, and all the following experiments, the urea and chlorine were determined according to Liebig's method, with the nitrate of the protoxide of mercury; the uric acid was precipitated by hydrochloric acid; the quantity of phosphoric acid was ascertained by Liebig's and Breed's process, with test solutions of chloride of iron and acetate of soda, and the sulphuric acid, by a test solution of chloride of barium.

The above table is to be regarded as exhibiting, under the conditions specified, the normal amounts in my own person, of the several constituents of the urine whose quantities were determined, and with them, the results obtained in the ensuing experiments are to be compared. For, if by increasing or diminishing the amount of mental exercise, or varying the diet, any change occurred in the constitution of the urine, such change would very properly be considered as resulting from this alteration—the other conditions, of course, remaining undisturbed.

Several important facts would seem to be rendered apparent from the foregoing experiments, which, however, I shall not at present stop to consider, but proceed at once to the main subjects of this paper.

1st. The urine, as affected by increased and diminished intellectual labour.

A. With the view of determining the influence of *increased* intellectual exertion, I doubled the number of hours appropriated to study, taking for this purpose, three hours from the number given to sleep, and four from that assigned to recreation, &c.; making a total of fourteen hours of the twenty-four, during which the mind was intensely occupied. This system I continued for ten successive days. The conditions of food and bodily exercise remained precisely as in the standard series of experiments. The urine was examined in the same manner as before. The following table exhibits the results of the analyses. The mean temperature of the atmosphere during these experiments was 82° Fahrenheit.

	Quantity.	Urea.	Uric acid.	Chlorine.	Phosphoric acid.	Sulphuric acid.
1st day . . .	40.10	741.53	12.30	168.22	65.08	47.18
2d day . . .	43.67	748.55	10.35	171.94	65 89	48.91
3d day . . .	44.59	749.67	10.06	175.13	67.35	50.17
4th day . . .	44.29	749.72	10.37	174.68	67.51	50.00
5th day . . .	43.17	747.56	10.93	170.85	66.99	48.79
6th day . . .	44.87	750.66	10.44	175.25	68.66	50.60
7th day . . .	45.18	754.23	9.82	176.33	68.73	50.78
8th day . . .	43.73	747.86	10.86	171.89	68.02	48.92
9th day . . .	42.13	745.69	11.01	170.75	66.27	47.23
10th day . .	43.90	747.92	10.38	172.24	67.04	49.00
Average	43.56	748.33	10.65	172.72	67.15	49.15

B. The influence of *diminished* mental labour was next to be ascertained. I, therefore, omitted studying entirely, and passed the seven hours allotted to it in the standard experiments, in reading light literature, and otherwise beguiling the time in amusements requiring but little mental exertion. As previously, this was continued for ten successive days. The food, exercise, &c., remained unaltered. The effects of this course upon the urine, are shown in the following table. The mean temperature of the atmosphere during this series, was 77°.

	Quantity.	Urea.	Uric acid.	Chlorine.	Phosphoric acid.	Sulphuric acid.
1st day . . .	33.36	591.90	14.70	144.70	28.79	37.01
2d day . . .	33.39	591.65	15 81	144.11	28.17	37.12
3d day . . .	33.12	591.77	15.00	143.40	28.21	37.23
4th day . . .	32.86	590.13	15.88	143.52	27.46	37.00
5th day . . .	32.73	586.55	17.58	141.18	25.80	35.36
6th day . . .	31.00	581.36	18.73	140.25	22.75	34.71
7th day . . .	31.47	583.22	18.28	139.15	23.84	35.16
8th day . . .	31.33	586.65	17.83	142.30	25.82	36.80
9th day . . .	31.60	580.84	19.14	140.69	20.58	33.18
10th day . .	30.59	582.43	18.27	140.17	22.60	34.62
Average	32.14	586.65	17.12	141.94	25.40	35.81

That the results exhibited in the above tables are to be ascribed to the increased and diminished exercise of the mind respectively, cannot, I think, be reasonably doubted. They are too well marked to admit of any other explanation, especially as the utmost care was taken that the remaining conditions of physical exercise and food should continue as in the first series of experiments.

The conclusions which are to be deduced from these investigations, may be briefly stated as follows:—

1st. That increased mental exertion augments the quantity of urine.

2d. That by its influence, the urea, chlorine, and phosphoric and sulphuric acids, are increased in quantity.

3d. That the uric acid, on the contrary, is very materially reduced in amount.

4. That diminished intellectual exertion, produces effects directly contrary to all the above.

Thus, the brain is seen to follow the same general law which governs the other structures of the body—increased use promotes increased decay, and the products of this decay are, in like manner, removed from the system to make way for newer matter. Intense mental labour, by accelerating the metamorphosis of the cerebral tissue, necessarily requires a renewal of that tissue, and thus the nutritive elements of the food are diverted from those parts of the body by which they would ordinarily be appropriated to that organ which so imperatively demands them. The exhausting effects of long continued study, without a corresponding increase in the quantity of nitrogenous food ingested, or the use of some one of the articles of "accessory food" (as Dr. Chambers very properly designates them—see *Brit. and For. Medico-Chirurgical Review*, October, 1854, p. 302), which possesses the power of limiting the waste of tissue, scarcely admit of any other satisfactory explanation.

2d. The urine, in its relations to certain articles of human consumption—tea and coffee.

A. With the object of determining the effects of *tea* upon the animal economy, as evidenced in the composition of the urine, I took daily into my system thirty-two ounces of the strong infusion of black tea (sixteen ounces at breakfast, and sixteen ounces at 7 o'clock in the evening) in lieu of the water forming part of the standard diet. The other food, with the physical and mental exercise, remained undisturbed. This course was continued, as in the other experiments, for ten consecutive days.

Through the influence of this substance, the mental faculties were rendered much more active, the pulse was increased in frequency, and there was a strong desire for additional bodily exercise which it was difficult to repress. At night, all these phenomena were increased in intensity, and there was great indisposition to sleep. They generally lasted five or six hours after drinking the tea. About the sixth day, the physical phenomena began to subside to the natural standard, but there was still the same increased mental energy, and an inward feeling of satisfaction, which remained till the experiments were concluded. The following table exhibits the effects upon the urine; mean temperature of the atmosphere 70°.

	Quantity.	Urea.	Uric acid.	Chlorine.	Phosphoric acid.	Sulphuric acid.
1st day . . .	33.35	621.73	13.05	139.07	39.15	36.25
2d day . . .	32.40	618.50	13.00	141.81	38.49	36.17
3d day . . .	32.61	618.55	13.02	140.63	38.71	35.90
4th day . . .	31.77	619.61	13.09	139.12	37.50	35.83
5th day . . .	31.03	617.11	12.60	138.43	38.25	33.18
6th day . . .	30.68	617.05	12.62	138.44	40.06	30.09
7th day . . .	30.14	615.09	12.41	137.54	39.55	30.45
8th day . . .	30.10	617.26	13.12	136.19	37.48	31.30
9th day . . .	29.84	615.38	12.36	137.78	36.85	32.03
10th day . .	29.96	616.49	12.18	136.20	36.70	31.28
Average	31.18	617.67	12.74	138.52	38.27	33.24

Upon comparing the above table with that containing the results of the first series of experiments, it is seen that the effect of substituting tea for water, was to diminish the amount of urine, and with it the quantity of each of the several constituents; and this notwithstanding the additional amount of nitrogen ingested, and the increased exercise of the mind which unavoidably attended the use of tea.

These experiments are confirmatory of those of Böcker, except as regards the phosphoric and sulphuric acids, which this physiologist found were not materially affected by the use of tea, but which in the present investigations, are shown to be considerably reduced in amount. The results generally are more decided than those obtained by Böcker, even though a less amount of tea was apparently ingested. This, however, may be owing to a difference in the strength of the infusions.

B. *Coffee.*—Thirty-two ounces of strong coffee, prepared by the percolation of boiling water, to saturation, through the roasted grounds, were taken in the same manner as the tea, daily for ten successive days. The effects upon the brain and nervous system were even more strongly marked than when the same amount of tea was taken. They lasted about eight hours. The pulse was but slightly increased in frequency. The other functions of the body did not appear to be affected. The influence upon the urinary secretion is shown in the ensuing table. The mean temperature of the atmosphere during these experiments was 71°.

	Quantity.	Urea.	Uric acid.	Chlorine.	Phosphoric acid.	Sulphuric acid.
1st day . . .	35.80	640.00	12.14	137.52	42.80	35.67
2d day . . .	35.31	641.12	12.07	139.74	43.24	36.18
3d day . . .	36.16	639.54	12.26	138.39	42.19	35.35
4th day . . .	36.18	638.76	13.05	140.67	44.90	37.26
5th day . . .	34.77	640.10	12.81	140.66	43.69	37.40
6th day . . .	34.65	636.08	13 97	141.83	44.51	35.42
7th day . . .	34.04	638.80	12.89	139.18	45.06	36.45
8th day . . .	33.28	641.20	12.11	138.10	45.26	37.58
9th day . . .	34.34	638.96	13.68	142.25	44.31	36.07
10th day . .	33.40	635.46	14.21	140.16	43.48	36.13
Average	34.79	639.00	12.91	139.85	43.94	36.35

The above experiments show, that the action of coffee upon the urine is very similar to that of tea, both diminishing the quantity of urine, and the amount of the several constituents specified in the tables, though not to the same extent. The reduction of the amount of urea is in accordance with the result obtained by Julius Lehmann, and, consequently, opposed to the opinion of Zobel, that, by the use of coffee, the quantity of this substance is increased. The effect of coffee in increasing the activity of the mind is much greater than that produced by tea.

From the above experiments with these substances, the following conclusions are deducible:—

1. That both tea and coffee are excitants of the brain and nervous system, and at the same time considerably retard the metamorphosis of the tissues.

2. That tea possesses a more powerful influence in restraining the destruction of the tissues than coffee, whilst this latter substance is a greater stimulant of the cerebral faculties and nervous system.

The practical application of these facts would lead to the use of tea in certain exhausting diseases, and in the labouring poor who are unable to obtain sufficient food to supply the necessary waste of animal substance, whilst for the rich, the student, the literary man, the man of business—and, in fact, all others in whom it is important to keep up a certain degree of cerebral activity, or physical ability, but who are not likely to suffer for want of nutriment, coffee is to be preferred.

As has been observed by Julius Lehmann, and as is also apparent from the foregoing experiments, there are two effects of coffee upon the animal economy which it is difficult to harmonize—the exciting influence upon the brain and nervous system, and the power it possesses of limiting the metamorphosis of the tissues. These effects follow the use of tea and alcohol also (and, as I have recently ascertained, tobacco), though they do not bear the same relation to each other with each of these substances.

That tea and coffee are beneficial to mankind when used in moderation, must be apparent to all who are acquainted with the recent investigations on the subject. Aside from their physical effects, the feeling of contentment they engender within us, and the disposition to reflection they encourage, are not to be disregarded in the estimation of the sum total of their good works. Sidney Smith says (*Memoirs of*, by Lady Holland): "Thank God for tea! What would the world do without tea? I am glad I was not born before tea. I can drink any quantity when I have not tasted wine; otherwise I am haunted by blue-devils by day, and dragons by night. If you want to improve your understanding, drink coffee. Sir James Mackintosh used to say he believed the difference between one man and another was produced by the quantity of coffee he drank." When experiment demonstrates what observation has long been teaching us, it should serve to check the railings of those who can see naught but evil in the use of these and other substances which are probably nearly as serviceable.

ART. V.—*Practical Remarks on Diseases of the Spleen.* By ALFRED G. TEBAULT, M. D., of London Bridge, Va.

HAVING described, in a previous paper (see No. of this Journal for January last), the most important elementary forms of the diseases under consideration, I shall now proceed to treat, in a general manner, of some of the complications and morbid results observable in malarious cachexia, in which, affections of the spleen form an important link in the chain of diseased phenomena. Whilst engaged on this topic, and as the scope of this paper is purely practical, I shall take the liberty to glance at a few points of treatment which may be suggested as of passing importance. For the sake of convenience, the present remarks will be grouped under the heads of hemorrhage, anæmia, and dropsy.

Hemorrhage.—When hemorrhage within the alimentary canal occurs as a concomitant of any other morbid condition of the spleen than its softening degeneration, its true cause, in very many instances, may be traced to hepatic obstruction. It is often preceded by an evident and increased intumescence of the spleen, by unmistakable symptoms of gastro-enteric congestion, and not unfrequently by the appearance of hemorrhoids—all of which are manifested at the verge or extreme of the portal system. At the same time may be noticed a torpor of the biliary function, a bombycinous hue of the surface, and inability, more or less complete, to lie at ease on the left side. Physical examination of the liver may not at all times reveal any increase of volume; nay, it may even indicate the contrary, as when the intestines were pushed up, as it were, before an enormous spleen, into the right hypochondrium; and when percussion failed to recognize there any signs of glandular dulness, yea, whether from congestion, atrophy, or degeneration of the hepatic substance, it was pretty evident the portal radicles had ceased to offer a free transit to the blood.

Sometimes, so great and sudden is the reduction of a splenic tumour after the occurrence of enteric hemorrhage, that an observer is almost led to conclude the latter to be an effort of nature, directly or indirectly critical of the former. Such reductions were, on the whole, more marked when the discharge of blood took place within the stomach, and passed off, in part, through the bowels, intermingled with dark biliary matter. Several of these cases had a favourable issue. But it mattered not whether the hemorrhage was from the stomach or the intestines, whether it was dark and grumous, of a modena or of a vermilion hue, so that it was not inconsiderable in amount, it was sure to be followed by, at least, some degree of flaccidity in the mass of the enlarged spleen.

Hemorrhages from other organs possess a more remote, though still a perceptible influence towards the same tendency. Of these, hæmaturia takes the precedence in relieving congestion of the spleen; but as it may terminate in inflammation of the kidneys, its appearance is one calculated to excite solicitude on that account. Epistaxis, when it occurs in cachectic patients, during the vicissitudes of temperature in the winter and spring, is, like the dark red spots observed on the cheeks under similar circumstances, rather an indication of congestion or inflammation, perhaps as yet latent, of the organs of respiration. It is worthy of remark that, where but one lung is affected, both the epistaxis and the flushing of the cheek are apt to be manifested on the side corresponding thereto. Thus, also, it may be seen at a glance how hæmoptysis may originate and forestall epistaxis.

One circumstance must strike the attention of the physician, that hemorrhages, and especially those from the gastro-enteric mucous surfaces, do not seem to enhance the anæmia pre-existing, provided they are moderate and not too often repeated, but at times are even followed by decided evidences of a depuration of the circulating fluids. These evidences consist mainly in an improvement of the various secretions, an approximation to a healthier complexion, and an increased tone of fibre.

From the above statements, one might be almost tempted to regard blood-letting as especially indicated in cases of splenic infarctions, did not actual experience teach that it falls far beneath those spontaneous discharges in its salutary results; and that more than they, it impoverishes the blood, precipitates a dropsical diathesis, and that it may, even in some complications of acknowledged splenitis, induce a fearful adynamia, from which the patient cannot recover. As a hint towards the further elucidation of this subject, it must be borne in mind that, in enteric hemorrhage, the depletion involves the portal system, the blood of which tends to a partial stasis in malarious cachexia.

The instances, however, where enteric hemorrhage itself proves beneficial, are few in comparison with those where, either through its profuseness or frequent repetition, it induces extreme prostration or collapse. Some cases yield in the least to no remedy, and the patient bleeds to death, and even after death. Nevertheless, recovery may take place under apparently the most untoward circumstances. Ordinary astringents, such as the acetate of lead, sulphate of zinc, and the various articles containing gallic acid, however combined, have disappointed all my expectations. The means to be mostly relied upon I have found to be spirits of turpentine and laudanum. Of the oleum terebinth. I have prescribed from half a drachm to a drachm, at intervals of fifteen to thirty minutes, whenever much depression of the pulse and prostration of strength existed; but under conditions of febrile excitement, one ounce was given at a single dose, and repeated, if the occasion required. This treatment very frequently proved speedily efficacious in controlling, if not always in arresting intestinal hemorrhage. Indeed, it has been successful in cases which I should have formerly deemed entirely hopeless. The tinct. opii, for equalizing and sustaining nervous power, has always maintained the position of an important adjuvant.

In hæmaturia, the various preparations of opium, together with revulsive means, constitute our chief reliance. Under their careful exhibition for a period, much of the cachectic taint will also very often disappear.

Case XVII.—Henry M——, aged 31, was visited on the 16th October. He had been sick for some time with intermittent fever; but latterly the chills had become very slight, and the febrile exacerbations prolonged and scorching. His spleen, which had been enlarged and indurated for years, had very lately increased to an enormous size, reaching to the hypogastrium. It is hard, tense, and somewhat painful on pressure. Pulse about a hundred, small, and frequent; tongue furred and foul; some thirst; bowels costive; abdomen tumid and remittent; urine scanty, red, and pungent. ℞.—Hydr. chlorid. mitis gr. xv; div. in chart 4; one to be taken every two hours. A saline draught to be exhibited two hours after the last dose. Ordered a warm cataplasm to be applied over the abdomen.

October 17. He had passed copious stools of black, grumous, and bloody matter, which stained the chamber utensil of a purplish hue. In the meantime, the spleen had shrunk to about one-half of its former dimensions. It feels flaccid, and is not the least painful or sore on palpation. The fever, also, had greatly abated. ℞.—Hydr. chlor. mitis gr. xii; to be taken at once.

18*th*. The alvine discharges, though moderate in amount, became bilious, and, finally, more natural in appearance. All febrile symptoms disappeared.

The after-treatment consisted entirely of the decoction of cornus Florida, under which he regained more than his former state of health, his complexion being much improved, and the spleen scarcely to be felt for several years afterwards. It will be remarked that, in this case, no quinia or preparation of iron was administered.

Case XVIII.—Called, whilst passing the house, to visit a lady, aged 36, who had recently come into the neighbourhood. She had been affected with malarious cachexia for the last twelve years, and had been more than once salivated. The leading complications of her malady were emaciation, dyspepsia, enlargement of the spleen, torpor of the liver, habitual costiveness, palpitation, dyspnœa, and amenorrhœa. Her complexion was dusky, and at times livid. I found her in an alarming condition, nearly collapsed and pulseless, and vomiting, at short intervals, large quantities of semi-coagulated blood of a modena hue. She experienced faintness and tinnitus aurium. ℞.—Ol. terebinth. f℥j; tinct. opii gtt. xx. M. To be taken every fifteen minutes *pro re nata.* Ordered synapisms and emp. cantharid.—the latter to the abdomen. After the second dose of the medicine, the hæmatemesis ceased entirely. Laxative enemata were then administered. The after-treatment consisted mainly of opiates given at long intervals, for her stomach rejected every other means that were essayed. In a few days, it was found necessary to reduce the dose, and the twelfth of a grain of sulphate of morphia was given three times a day with great benefit. When more than this dose was given, various nervous symptoms appeared; and whenever it was withheld altogether, nothing, not even the blandest food, could be retained on the stomach.

Under this treatment, however, the palpitation and dyspnœa subsided, the digestive powers improved, and her bowels, which had been costive for years, became perfectly regular, and the discharges normal. In about three months she regained her flesh and a healthier complexion, her menses having in the meantime reappeared. As there remained now nothing of her previous malady, except a slight degree of œdema about the ankles, some debility, and a slight enlargement of the spleen, she was directed to take the ferri carb. præcipit. She eventually recovered so as to resume her domestic duties.

Case XIX.—Mr. M——, aged 37, was visited for the first time, October 22d. He stated that he had been in bad health for the last five years, and for a still longer period affected with an ague cake.

In August last, he was attacked with a low fever of the quotidian type, having slight chills in the morning. This did not entirely confine him to the house. About the 14th inst. the chills ceased, and he became "feverish all the time." From this time he felt a soreness in the epigastrium and over the spleen. This soreness gradually extended over the entire abdomen, which became enlarged and tympanitic. Œdema of the face and inferior extremities; bowels costive; urine high coloured. He had taken no medicine, and had walked out whenever the remissions permitted him.

He had walked the day previous a distance of five miles, and on his return was taken with nausea, vomiting, and ineffectual efforts at straining at stool. The abdomen was greatly distended, and painful on the slightest touch, particularly as regards the hypogastric and left hypochondriac regions. He was unable to lie on the left side, and kept his thighs flexed. Tongue covered with dry fur; taste bitter; pulse feeble and small; skin pale, dry, and warm; expression of deep anxiety. The means resorted to allayed the irritability of the stomach, but within a few hours a profuse intestinal hemorrhage ensued, and speedily terminated in death.

In a similar case, where a very superficial post-mortem examination was permitted, the mesentery and intestines were found pale and exsanguineous; the spleen extended to the left iliac region, and was extremely flaccid, whilst the splenic artery, vasa brevia, and coronary arteries of the stomach, were very much enlarged. The liver appeared condensed, and was unusually small. The kidneys rather large.

Case XX.—A gentleman, aged 47, and labouring under the effects of malarious cachexia, was liable to periodic attacks of hæmatemesis, accompanied with febrile excitement. On the last occurrence, the quantity of blood discharged was large. One ounce of oleum terebinth. was administered, and not only did it then arrest the hemorrhage, but for several years afterwards, during which the individual lived, he was free from such discharges.

Anæmia.—The abnormal condition of the sanguineous mass, so important an element in malarious cachexia, influences both the innervation and the secretions. Examinations of the blood, without any pretensions towards a quantitative analysis, have yielded the following results: It is at times pink or pale red, at others dark; it coagulates imperfectly, and exhibits an irregular clot, comparatively small to the watery serum which still entangles some colouring matter. In fact, the blood often resembles that of an atonic epistaxis of long duration. When the clot is dark, the serum is sometimes found of a deep yellow, a hue of which the skin of the patient is apt to partake. The chief alteration may be summed up as a diminution of the fibrin and of the corpuscles, and an increase of the proportion of water. In this spanæmia there are abundant reasons to suspect a further deterioration of the circulating fluids through materials absorbed or uneliminated.

From the want, then, of a due relation between the blood and the nervous centres is possibly to be ascribed various neuroses which arise in the course of cachexia, such as neuralgia, from the simplest grades to those which simulate diseases of a graver character, *e. g.* meningitis, or which invade at the same time, but with different shades of intensity, one-half of the body, appearing as hemicrania, pleurodynia, sciatic pains, etc.

To this cause, also, may be due the loss of mental vigour, the slowness of conception, the general apathy to passing events which operate on mankind; the habitual melancholy, carelessness, and indolence; as also, in another phase, the peevish irritability from trivial causes, rarely leading to violent outbreaks of passion, but settling in a morose temper, the fruitful soil of deep-rooted and unconquerable prejudices. Although monomania may be occasionally manifested, as also some forms of melancholia and hypochondriasis, yet insanity requiring seclusion is of rare occurrence from malarious cachexia.

Dyspnœa readily follows the least over exertion, not so much from the impediments offered to the diaphragm by the bulk of the spleen, but rather, as it will be found upon closer scrutiny, from the presence of an impoverished circulation through the lungs. Thus a cachectic patient will breathe easier, and endure more prolonged exertions when the temperature is warm, and the atmosphere, therefore, rarified. In the cold months, such patients are prone to attacks of deep-seated bronchitis or typhoid pneumonia, whose invasions are oftentimes insidious, but may even then be indicated to the practised eye by the dark red spots of the cheeks. When one lung alone is diseased, the blush will, in a majority of instances, occupy chiefly the corresponding cheek. The physical signs, of course, will dissipate all doubts. In certain of these cases, after shivering and fever, come on pain in the head, left shoulder, and side, flushing of the left cheek. The skin is dry, and of a dingy hue; percussion dull over the lower third of the left lung; crepitating rale; bloody sputa. The right lung remains for a time little involved. The bowels are costive; the abdomen doughy and swollen; the spleen tense and voluminous, attaining its greatest magnitude about the fourth or fifth day of the attack, and but little painful on palpation. The liver presented, for the most part, no marked increase of volume.

Great caution must be had in the physical diagnosis, if true, from simulated organic diseases of the heart, for the want of which, a superficial observer may fall into grave errors. Thus, there may be presented palpitations, the *bruit de soufflet*, a jerking impulse of the heart, and pain more or less acute, referred to the præcordia; yet all these may be produced by causes altogether independent of organic cardiac lesions, and will yield effectually to a treatment directed to remove obstructions from the portal circle, quiet irritation, and promote hæmatosis. Again, the sounds may be perceived over a more extensive surface than usual, owing to the emaciation of the patient, fever, nervous agitation, or indeed anything that may increase the frequency of the pulse. But whilst such constitute the ordinary functional disturbances of the heart in cachexia, its more serious lesions are by no means seldom. That chiefly observed has been dilatation of the ventricles and auricles, in which there were always reason to suspect pressure upon the great venous trunks. The external jugular veins were swollen, but did not present any pulsation; the countenance was often livid, and some degree of œdema resulted. It is worthy of remark that hæmatemesis occurred in several of these cases, in one of which the stethoscopic signs indicated, afterwards, polypous concretions within the cavities of the heart.

Let it be observed that, in splenic cachexia, the stomach participites largely in whatever morbid phenomena are manifested, and may exhibit any of the multitudinous forms of dyspepsia. Avoiding a recapitulation of these, one complication merits a more than mere notice. When, in constitutions broken down by repeated attacks of periodic fever, the stomach and the liver, on the approach of winter, become the chief foci of a chronic phlegmasia, the following symptoms were likely to occur: Anorexia; oppression and soreness at the præcordia; a persistent tickling cough, unaccompanied by expectoration; dyspnœa, especially in walking, or even in the erect posture. A progressive emaciation resulted in conjunction with a low type of fever, which bore a close resemblance to the hectic. Both the liver and the spleen were found parabysmic; the bowels constipated; the lumbar regions weak and painful, while supporting the weight of the trunk; the urine thick and sedimentous. The mind was despondent and apprehensive of danger, and the countenance expressive of anxiety. The progress of this affection was usually slow, and auscultation, for a considerable time after, failed to detect any serious lesion of the lungs. In the earlier stages of this form of dyspeptic phthisis, as it may be termed, the following treatment has proved very successful: ℞.—Morphiæ sulph. gr. ii; tartrat. antimon. gr. ii; hydrarg. chlor. mitis gr. vi. Mic. panis vel conserv. rosarum q. s. M. ft. pilulas xii. One to be taken three times a day. These were given with occasional laxatives (great care being taken to avoid ptyalism), till the secretions were restored, and the subfebrile condition subdued. Afterwards, the sulph. quiniæ and the præcip. carb. ferri, or the tart. ferri et potass. were administered during the whole period of convalescence.

Splenic affections do not appear to influence directly the secretion of the menses, or the generative function; but amenorrhœa may result from anæmia, and then the latter partakes of the chlorotic character.

Dropsy.—Without doubt, it would be wrong to elevate diseases of the spleen to the same degree of pathological importance with those of the liver, in the production of dropsical effusions. Nevertheless, although intumescence of the spleen is itself so often symptomatic of hepatic obstruction, it appears, in certain instances, to have a joint agency, and, in a few others, to take the lead in inducing dropsy in malarious cachexia. Thus, the pressure of the increasing bulk of the spleen may be such as to interrupt the current of the blood, the friction to which its distended surface is subject may terminate in irritation and transudation; and again, some of the degenerations of its parenchyma may bring about a similar subacute peritonitis, which, by being propagated from its point of departure over an extensive surface, will cause ascites of a grave character. But as in all such cases the liver will also be found abnormal, the whole subject assumes so complicated an aspect, that we must rest satisfied, for the present, with some generalities.

When after febricula, with increased parabysmic swelling and soreness of the upper abdomen, and more or less oppression in the functions of the circulation and respiration, anasarca comes first, the cause may be regarded as congestion of the liver and spleen, mechanically impeding the free flow of the blood towards the heart.

Ascites follows the anasarca when subacute inflammation of the peritoneum is superadded, and eventually hydrothorax may result.

But should ascites be first manifested, and rather suddenly, without the pre-existence of chronic dyspeptic symptoms, and in the midst of irregular and occasional febrile movements, during which the enlarged liver and spleen had been subject to evident oscillations of size, whilst the adnata and complexion had recently become more or less jaundiced, we may suspect interlobular congestion, or in other words, hyperæmia of the portal radicles.

If the first symptoms be low fever of a caumatic type, tympany, soreness, or pain in the abdomen, especially over the region of the tumefied spleen, accompanied with the murmur friction on palpation, and should ascites follow, it will not be difficult to diagnose splenitis. Such cases result during pregnancy, and after injuries or over-exertions which require the contractions of the abdominal muscles.

Besides these modes of invasion, which fall directly within the scope of our remarks, it is evident dropsy may arise in the progress of malarious cachexia from other varieties of hepatic lesions, from simple atrophy to the nutmeg or granular degeneration.

We also meet with renal diseases. In the earlier stages, the urinary secretions are pretty generally morbid, possessing strong acid reactions; but afterwards, albuminuria may appear, as also at times melænic urine.

In all the instances of dropsy now under consideration, we must ever keep in mind that the general mass of the circulating fluids has become deteriorated, and, moreover, that there exists a strong tendency to a stasis of blood from pure gravitation. It may here be noticed, that instances of arrested development are occasionally met in young persons under the influence of malaria, in which the liver retains its embryonary condition, being relatively very large, while the general growth of the person is such, that when 19 or 20 years old, he will exhibit the stature, and sometimes the appearance of a youth of 12 or 13 years.

The cases which follow are selected to show the effects of a few remedies in dropsy from malarious cachexy:—

Case XXI.—George W——, aged 61. Admitted to the Poor-house; but being at times somewhat imbecile, could give no satisfactory history of his case. He had been intemperate, and for many months past had suffered from a series of chronic biliary disorders. The case presented, on admission, universal jaundice; slow, irregular fever; tongue furred and tremulous; costiveness; considerable enlargement of the liver and spleen; some degree of ascites and of anasarca, chiefly of the lower extremities; lumbar pains and weakness; urine high coloured, voided with difficulty, and in small quantities; frequent desire to micturate; sometimes violent pains occurred at the neck of the bladder, and a little blood was discharged. The urine deposited a yellow sediment; albumen was also detected. He exhibited the nervousness of the inebriate, and his temper was peevish. After laxatives and a mild mercurial anodyne course, carried to slight ptyalism, the jaundice disappeared, and a slight amelioration ensued. At this stage quinia was given, but with no advantage. The alkalies, uva ursi, buchu, etc., had no effect on the urinary disease. The muriated tincture of iron was given with no better success. He now exhibited extreme pallor of the skin, with symptoms which led me to infer an atony of cerebral circulation, and though the secretion of the liver had evidently improved, the spleen continued enlarged, though less tense; the cystic symptoms and the dropsical diathesis were on the increase. In order to relieve pain, and gain time for reflection on the further treatment of the case, I gave one grain of opium ordinarily every six hours; but at times, to relieve pain, every four hours. The speedy and beneficial effect of the opium soon caused me to dispense with every other means except an occasional laxative of castor oil or rhubarb. The opium, instead of increasing constipation, allowed of the easier operation of the laxatives; it also diminished a tendency which existed to stupor; by alleviating pain, it allowed tranquil sleep; but it at no time caused drowsiness. The secretion of urine increased, and passed away with little pain and at lengthened intervals. Next, the spleen lessened very perceptibly, till it could scarcely be felt below the ribs, and in a few weeks all dropsical effusions disappeared. The skin became more natural, warm, and transpirable. The low fever left him, his mental condition improved, and he was more cheerful and hopeful. Digestion good; no enlargement of the liver could be detected. In about a month, under the use of the opium, the only symptoms remaining were difficulty and pain in urinating, whenever the remedy was withheld. I continued three or four grains of opium per day for the period of six months, when only a slight dysury remained, and he was then discharged to return to his occupation.

I have since found the same treatment with opium highly beneficial in hydrothorax after gastro-enteritis, or after scarlatina, and in ascites after scarlatina. It seems that the action of opium, in the cases from malarious cachexia, when other means have failed, is clearly deobstruent, along with its power to quiet subacute gastric irritation. Candour demands that I should say I have never used opium as a first resort, but after other means had failed, or could not be depended on.

Case XXII.—This instance was one of ascites, in an individual at the middle period of life, who suffered from infarctions of the liver and spleen, and all the general symptoms of cachexia. He led a life of improvident exposure. Anasarca and ascites resulted. Mercurials could not be prescribed with safety, from obvious causes. As he laboured under considerable fever, jalap and cream of tartar were administered for several days. On the subsidence of the fever he appeared debilitated, and but little relieved of the effusions. He was ordered the following: ℞.—Sulphuris flor. gr. iii; sig., every four hours. The effect of this remedy was watched narrowly. It acted on the skin, and apparently in a very gentle manner on the liver also, the secretion of which was in a few days greatly improved. In this case, it seemed also to determine to the kidneys about bedtime. Under this remedy the dropsy entirely disappeared, and the patient was restored to more than his previous health. I have found the sulphur not only a valuable antiperiodic where intermittent fever lurked in a protracted form, but as possessing unquestionable power to reduce an enlarged spleen. The latter effect is enhanced when, in conjunction with the sulphur, ferruginous waters are drank. Larger doses of sulphur than gr. iii, for an adult, do not seem to have as happy an effect.

Case XXIII.—S. M——, aged 27. On convalescence from a bilious congestive fever, during which mercurials and quinia had been freely used, he relapsed into various attacks of biliary disorders of greater or less intensity. Having come under my care, I visited him on the 29th November. He complained of great looseness of the bowels of several days' duration, now numbering seven or eight stools per day, and attended with much straining, the discharges being watery, and of a pale yellow colour. Urine deeply coloured.

Skin pale, moist, but not warm; spleen greatly enlarged, and extending to the hypogastrium, but is not tense to the feel; abdominal parietes partially relaxed, but containing some considerable dropsical effusion, very evident on succussion; considerable anasarca of the lower extremities. Ordered G. opii. every six hours, unless the frequency of the alvine discharges should require the interval to be lessened to four hours *pro re nata.* ℞.—Sulph. flor. gr. iii; sig. every four hours during the day. Apply to the abdomen liniment terebinth.

December 3.—The opium in this case acted well; the alvine discharges were reduced to one or two per day, and became natural. The spleen now hangs only two inches below the false ribs anteriorly, and is much softer. No ascites can be perceived, and no enlargement of the liver. The anasarca only appears after having sat up for several hours. Urine clear, and presenting no sediment; skin pleasantly warm and moist; appetite and digestion good. Continued the treatment for some time longer, and a complete cure was effected without any resort to quinia.

Case XXIV.—J. S——, aged 30. Afflicted with an enlargement of the spleen from infancy. He experienced, of late, a loss of mental and bodily energy. Skin dry; cuticle thin and velvety; complexion dingy yellow; conjunctiva pale green; lips thin, and very pale; general attenuation of the frame; eyeballs sunk, and isolated within their sockets, from want of fat; tongue furred white; gums thin and pale; appetite voracious; assimilation imperfect; abdomen protuberant; bowels regular; urine high coloured in the febrile stages, at other times pale. The spleen presents all the signs of hypertrophy, extends beyond the umbilicus, and feels sore only on much pressure. The liver is not perceptibly enlarged. Respiration somewhat oppressed; pulse thrilling, small, and soft. Whilst in this condition he was exposed to sudden cold. This brought on a chill, accompanied with dysenteric discharges and tenesmus, to which succeeded fever and œdema of the inferior extremities. Having been partially relieved of the dysentery, he called on me. I found his debility much; splenic tumour hard and turgid; no ascites, but anasarca to some extent; skin dry, and with all the main symptoms previously detailed. Prescribed a decoction of cinchona, to be freely drank. In a couple of days, all febrile symptoms had disappeared; the spleen had diminished in hardness and somewhat in size; the abdomen was less protuberant; the bowels regular and represented as natural; the urine pale and copious, and the œdematous swellings had entirely disappeared. Continued medicine, and in addition ordered carbonas ferri. When he last called on me, he had regained some flesh; his expression was more animated and hopeful; eyes brighter and less sunken; skin more natural; had lost the velvety feel, and was transpirable, but still had a tinge of yellow; tongue smooth and clean; gums firm; respiration easier, and not very easily oppressed; bowels moved once or twice a day; abdomen shrunk; spleen further reduced and softer, except in its angular apex, which passes the mesian line above the umbilicus, where some hardness may be felt. There is no fulness of the right hypochondrium. One fact is worthy of notice: whenever this patient drank of ardent spirits, even in a moderate quantity, it was sure to be followed by an increased density of the splenic humour, and a return of the œdema about the ankles. In this case, it was surmised that the liver had undergone degeneration, and hence mercurials were inadmissible. Quinia was not so well adapted to the case; for, though it was likely to diminish the spleen, if given in large doses, yet it might by that means have hazarded hemorrhage, as there was not a free outlet through the liver for the portal blood. This patient, after this, removed to the city of Norfolk, where he lived a few years.

Case XXV.—James K——, aged 18, but has the appearance of a lad of 12 years. Had been twice gravely salivated by his physicians for hypertrophy of the spleen and dropsy, but without any benefit. This case came temporarily under my treatment, July 10th. I found him anæmic, surface bombycinous; conjunctivæ greenish; abdomen very prominent; spleen greatly enlarged; ascites; liver greatly enlarged, and extending almost to the umbilicus, and occupying a large portion of the epigastrium; can be distinctly palpated; bowels rather loose. Impulse of the heart violent and extensive. ℞.—Sulph. quin. gr. xvi; Sulph. morph. gr. ⅓. M. div. in chart. ii. One each morning.

12*th.* Abdomen greatly reduced; fluctuations scarcely to be felt; spleen reduced one half, and feels irregular on its surface, whilst its anterior margin is notched and prominent. The liver appears less voluminous, and is not sore on pressure. Whilst the abdomen has thus subsided, the ankles have become considerably œdematous. ℞.—Lactis sulphuris ʒss; bitart. potass. ʒj. M. div. in chart. x; sig. One three times a day. Pediluvium of ley water ordered.

14*th.* Complexion much improved; skin transpirable; expression animated; pulse soft and regular; tongue clean; bowels moved twice per diem; discharges natural; urine apparently normal; parietes of the abdomen flaccid, and the skin thereof wrinkled, or appearing shrivelled; no fluctuation can be detected; apparent surface of the spleen below the ribs 3 + 2½ inches; still decreasing since the last entry; the left lobe of the liver very distinct, and hanging down from the epigastrium midway to the umbilicus, the finger can be insinuated under its thin edges; the right lobe extends equally as low, but cannot be palpated as easily; the œdema has left the extremities, but both calves are erythematous; rhythm and impulse of the heart much less, and nearly normal. Continued medicine.

24*th.* He again sought advice. A great change had occurred in his favour. Both the liver and spleen were farther reduced; there was no serous effusion. ℞.—Lac. sulphuris; precip. carb. ferri, āā ʒj; bitart. potass. ʒii. M. div. in chart. xx. sig. un ter in die.

August 1. Continues to improve. ℞.—Lac. sulph. gr. iii; sulph. ferri gr. iii. M. ft. pil. s. ter in die. ℞.—Decoctio corni Florid. occasionally. The case was then transferred to the charge of a medical friend.

With these cases I shall conclude the remarks on malarious cachexia.

Causes.—Affections of the spleen are met with, from birth to extreme old age; but they seldom originate for the first time after the middle period of life. Children are by far more subject to them than adults, women rather more so than men. A case of enlargement of the spleen, very shortly after birth, came under my notice, and this instance was declared by competent testimony to have been congenital. The child was much emaciated, and the tumour could be distinctly diagnosed. Another child, three weeks old, who exhibited the dingy hue and emaciation peculiar to malarious cachexia, presented a well defined tumour of an oblong shape and considerable extent in the left hypochondriac and umbilical regions. This child was also subject to slight paroxysms of intermittent fever; but its precise history and origin could not be ascertained, with the exception that "it had been sick almost from its birth." These instances would go to prove the intra-uterine influence of malaria.

After thirty or thirty-five years of age, it would appear that the system is most apt, if at all, to tolerate hypertrophy of the spleen, and to accommodate itself to the affection. After that age, the acclimated are better able to resist malarious influences, and, indeed, all affections so produced undergo a sensible decrease in intensity. Thus, a person affected with splenic cachexia may eventually regain much of a healthy complexion, and some degree of *embonpoint,* and may pass among his acquaintances for a *bon vivant,* with the paunch of an alderman, and his existence may be prolonged for years, if not suddenly cut off by some congestive affection, to which all such are prone.

Enlargement of the spleen *seems,* in many instances, hereditary, affecting every member of some families; but when we regard the habitus of such families, their lymphatic temperaments, and other cognate circumstances, we are forced to conclude that a hereditary transmission must be very limited.

The malarial origin of these affections is for the most part pretty clear, if we consider their connection with periodical fever, their greater prevalence in the neighbourhood of morasses and lagoons; on the borders of swamps; on lands badly drained, hemmed in by forests, and screened from the free circulation of the air, as contrasted with the greater immunity of dry and well ventilated localities. The impure water of wells dug in a swampy soil has been too much overlooked as a fruitful source of malarious poisoning, which sometimes induces cachexia by slow degrees, without any noticeable febrile prodromes, and at others produces pernicious congestive fevers, thus forming one of several modes by which malaria may enter the system. Be this, however, as it may, the fact remains that there are causes in certain localities which have an occult action on the circulating fluids, and on the functions of the skin and liver, as shown by the gradual change of complexion, the texture of the skin, and the progressive tumefaction of the abdomen, while the unfortunate subject drags along a monotonous, languishing existence, without the manifestation of any marked outbreak of fever.

The effect of atmospheric vicissitudes of cold and dampness, on a system debilitated by heat and malaria, must be taken into consideration; and, in this connection, I cannot but think that a suppression of the secretions oftentimes produces the action of a ferment or zymosis in the blood, which undoubtedly would have been eliminated but for this cause. During the steady cold of winter, an enlarged spleen remains stationary, unless under the influence of fever. But chronic cases are often rendered worse during alternations of temperature, especially when damp weather prevails at the end of autumn and in the spring; on the other hand, they are ameliorated during hot and dry weather, when insolation and imprudence in diet and drink are avoided. Those persons who are badly protected from the inclemencies of the weather, who are badly lodged, insufficiently clothed, and too indolent to procure fuel, are peculiarly subject to the effects of malarious affections. The neglect of frequent ablutions and cleanliness in clothing is another source of evil. Again, their powers of resistance to the influence of malaria are further neutralized by the use of insufficient and unwholesome food, badly prepared, or taken at irregular intervals or in immoderate quantities; by indulgence in spirituous liquors, particularly if habits of inebriety are established. If to these are, as most likely to be, superadded indolence, the violation of the laws of life will be complete.

On the other hand, those who are temperate, who add knowledge to virtue, who use a bland, nutritious, and slightly stimulating diet, and are well protected against the inclemencies of the weather, are to a great extent comparatively protected against the cachectic effects of malarious poisoning, and especially so, on attaining mature life. True, they may suffer from periodic fevers; but these usually yield readily to treatment, and rarely leave behind effects that for the balance of life poison the sources of enjoyment, of mental and corporeal activity.

Adult strangers from non-malarious regions appear, on the whole, less subject to enlargement of the spleen, especially of a chronic character, than are the natives, although they are liable to grave endemo-malarious fevers, in which affections of the liver, chiefly of an inflammatory tendency, are the predominating lesions.

The negro race enjoys a remarkable immunity from all forms of splenic disease, with perhaps the exception of incipient hyperæmia. Although I have paid minute and special attention to this subject, I have never seen but two instances of notably enlarged spleen in negroes—one of which has been detailed in Case I. The other was in a negro girl, aged six years. She had had an attack of scarlatina, which was followed by general dropsy, and a fever of the double tertian type. On the subsidence of the dropsy, the spleen was found enlarged and pendulous beneath the false ribs. She recovered fully under appropriate treatment. I have, besides, seen some two or three cases among mulattoes, one of which was in an advanced stage of anæmia.

To what, then, it may be asked, is the immunity of the negro race to be ascribed, notwithstanding their exposure to many circumstances which are hygienically adverse? All that can now be done towards leading to a solution of this problem, is the statement of a few facts.

1. Negroes endure well the heat of summer, and do not evince to so great a degree the consequent debility, so potent and constant an antecedent of autumnal fever among the white population.

2. Their skins and surface glands are peculiarly transpirable, and are prone to excrete carbonaceous compounds even during the reaction of fever. The darkness of the skin appears to be in direct ratio with its excreting power.

3. The cold stage of their fevers seldom amounts to shaking rigors; but has a proclivity to terminate in somnolency and stupor, which may extend into the hot stage.

4. Biliary congestion of the liver, not very persistent in its character, appears to be the chief lesion of their periodical fevers, which readily yield to purgatives, sometimes to only one, and to sweats, however induced. Quinia does not seem to possess the same therapeutic value in their cases, as it does among white persons.

5. Rarely are intractable cases of intermittent fever met among them.

6. Dysentery, or bilious diarrhœa, is a frequent complication among them. Rheumatism is a general complaint.

7. Great and protracted torpor of the cutaneous function is to be dreaded in their cases, as their powers of reaction, if not called forth soon, easily succumb.

8. During four years, in which I kept a record of cases of periodic fevers, occurring in a population of equal portions of white and black inhabitants, the proportion of attacks stood thus:—

Year.	Blacks.		Whites.
1	26	to	100
2	15	"	100
3	40	"	100
4	33	"	100

These are a few facts which I have thought it my duty to enumerate at present.

Diagnosis.—The diagnosis is not very difficult when the tumour protrudes beneath the false ribs; but whilst it is hidden under them, care must be taken to guard against error. A stress has been laid on the employment of palpation and percussion in these incipient cases, and it is unaccountable how they came to be thus elevated from their secondary importance to the ignoring of other means of diagnosis. We must bear in mind that the sounds, on percussion, vary very much according to the state of repletion, or emptiness of the stomach or colon, or the presence of gas within them; hence, when the spleen cannot be palpated beneath the ribs, these signs may prove fallacious. Thus, among many observations made to test the value of percussion, the following incidents may be cited: In a person who had not recently partaken of food, percussion over a very enlarged and turgid spleen yielded throughout, from the left hypochondrium downwards, a very decided hollow sound. Admitting the hollow viscera were tympanitic, still the test failed as showing the density of the spleen. So again in a child, rather emaciated, and who had just eaten an ordinary meal, percussion over the false ribs, and the enlarged spleen which extended half way to the umbilicus, elicited a clear hollow sound. We conclude, then, that dulness of sound over the hypochondrium, to be available as a diagnostic means, must be constant, and when constant, can only be taken as presumptive evidence of splenic tumefaction. Increased pain on percussion is not a constant phenomenon. As the organ possesses at times as little exaltation of sensibility as the adjoining viscera, pain may be absent or obscure on such occasions. I have never seen shivering, or the cutis anserina, from percussion, however employed, although some such result may follow blows in the direction of the solar plexus. So far as I have been able to ascertain, percussion is of value in the early stage of enlargement of the spleen, when, in addition to constant dulness of sound over its presumed situation, the patient complains of weight and soreness therein, and there exist an elevation and partial immobility of the false ribs, with an habitual attempt to relax the abdominal parieties by assuming a position favourable thereto. In this instance, the intercostal spaces will not be found obliterated. Care must be taken to compare both hypochondria, and to direct the attention to the condition of the lungs.

As to palpation, at the early stage now under contemplation, its revelations are of still less value when we consider the effects on the imagination of some persons, the proneness of others to be easily tickled in the hypochondria especially, and that when the palpation is rough it may cause pain in some who are perfectly free of disease. Still it is a means not to be entirely neglected on any occasion, when affection of the spleen is suspected; for so soon as the organ in its descent can be felt, palpation becomes our chief and most reliable means of diagnosis. Thus, by palpation and the accompanying symptoms, together with the history of the case, can diseases of the spleen, in their progress, be distinguished from those of the stomach, left lobe of the liver, colon, or left kidney; but should any of these organs be simultaneously diseased, then the morbid phenomena must be studied in detail. Having formerly touched on this subject in describing the various lesions of the spleen, I must refer to that portion of these remarks for what might be further said on the diagnosis of splenic affections.

Prognosis—The prognosis must, of course, be influenced by the existing lesion of the spleen; by the predominant cachexia; by the condition of the collateral viscera, especially of the liver; and by the character of the accompanying fever. Many of these circumstances have been noticed already, in connection with their bearing on the prognosis, and for fear of repetition we must content ourselves with a reference to a former portion of these remarks.

Indications.—The chief indications of the treatment of these affections I conceive to be, to remove all obstructions to the portal circulation; to obviate the periodical irritation of the parts supplied by the nerves of organic life; to promote hæmatosis, and place the blood in relation with the nervous centres. Without entering on a rationale of these indications, which, it is trusted, is sufficiently obvious, what follows will constitute a running commentary on the

Treatment.—When respect is had to the depressing action of malaria, the impoverished condition of the circulating fluids, and the chronicity of many of these affections, a strict antiphlogistic treatment must appear of very limited application. Indeed, experience teaches that, when required, active depletion of any sort, to be productive of good, should always be employed with caution and a due regard to the time when it will become necessary to support the powers of the general system. This remark must be taken in connection with the fact, that asthenia is not only easily induced wherever diseases of the spleen are prominent, but may be manifested at so early a period as to claim special attention from the commencement of their treatment. From this cause, general bloodletting will rarely be found indicated in inflammation (even when acute) of the spleen. The exceptions are, perhaps, when the patient is in the prime of life, at a very early period of the attack, and not fully tainted with cachexia, and when the pulse is neither thrilling nor easily compressible; but such an opportunity seldom offers in the vast aggregate of cases. On the contrary, when peritonitis had irradiated from the spleen, and spread over an extensive surface, such has generally been the awful prostration, within a very brief period, as to give rise to well founded apprehensions that the lancet would prove highly detrimental. Whenever it was admissible, no advantages have accrued to make up for the risks incurred—risks partly dependent on the deterioration of the fluids known to co-exist. It is to be regretted that the results of venesection cannot be alluded to here in more commendatory terms. On this account, therefore, and with a far better chance of success, reliance has been placed on a treatment of acute splenitis in which entered calomel and opium; cathartics or enemata of ol. terebinth. and ol. ricini; warm fomentations, and external revellants.

Further, it will be seen that the blood drawn, in cases of hyperæmia, chronic inflammation, and hypertrophy of the spleen, is usually dark, and flows in a slow and diminished current, the veins soon collapse, and the local affection receives little if any benefit. Some observations have, indeed, led to the suspicion, paradoxical as it may seem, that venesection in cachexia tends rather to increase than to disperse splenic infarctions, as it certainly does impoverish the blood to a greater degree. Topical abstraction of blood offers greater advantages. But cups applied below the costal margin, and over the splenic tumours, seem of questionable utility, the more so when the organ is painful or the softening degeneration exists; for fear that friction or pressure extended to the subjacent parts might originate or enhance peritonitis, or cause other mischief, the patient himself will resist or shrink from this application. Greater benefit results from local depletion by cups or leeches over the right hypochondriac and lumbar regions.

Nevertheless, when all the circumstances of these affections are taken into consideration, the linimentum terebinthinæ, sinapisms, blistering, or pustulation by means of the tartar emetic ointment, may justly supersede topical bloodletting, as they will be found to prove of as much, if not of more value. These derivative means are particularly efficacious in chronic splenitis, after one or two aperient doses of calomel, followed, after a proper interval, by a dose of rhubarb or jalap and cremor tartar, as the case may require.

In recommending calomel, I am aware that mercurials have of late fallen into some disrepute as a remedial means in these maladies, of whatever grade. I cannot join in the condemnation of this useful remedy, whose reputation is so well established in the diseases of the collateral viscera that accompany splenic affections, as also in the congeneric fevers. There are, indeed, circumstances which contraindicate its use, and to point these out is what the ends of a sound practice require; such are confirmed hydræmia, or purpura, because of itself, and without the intervention of mercury, productive of stomatitis or cancrum oris. In all other cases of splenic cachexia, where the vital fluids are but partially vitiated, and the powers of life not at a low ebb, mercury should never be given with a primary view to its specific action, but only so far as it may be necessary to remove hepatic obstruction and control inflammatory action. Ptyalism should be avoided, if possible, and, with due caution, is very seldom produced. At one period of my practice, it was my desire to make a resort to mercury, in diseases of the spleen, an exception to the general rule; but I soon found there was no adequate substitute for it in the majority of cases. True, it was comparatively rare that I was compelled to give more than one or two cathartic doses of calomel; but unless this much, at least, was done, the subsequent treatment was apt to be by no means as promptly effective. No other course could be relied on, in the early and forming stage of hyperæmia. The calomel was often given here more liberally, but always laid aside so soon as the function of the liver was brought under its influence, as evinced by the peculiar discharge of dark, bilious, and fetid evacuations. When dysenteric symptoms coexisted with the hyperæmia, as sometimes occurred on the conversion of an intermittent into a remittent fever, one or two scruple doses of calomel have often proved of speedy benefit, and in no instance has ptyalism succeeded. In the more chronic affections, when the liver was the seat of serious lesion, a mild course of mercury, assiduously watched, and not too long continued; or tentatively employed, with an occasional substitution of the nitric or nitro-muriatic acid, had often a highly beneficial result. Whenever the mouth was touched in the least degree, prompt measures were adopted to avert unpleasant consequences. Among the measures alluded to, spirits of turpentine applied to the buccal surfaces, and the internal administration of opium, have hitherto never disappointed my expectations.

There appears to be no substitute for calomel and opium, even at the risk of salivation, in cases of acute splenitis, particularly when hepatitis coexists; yet when the violence of the inflammation has subsided, it is a good practice to discard the calomel, so soon as it may be judged safe to do so. The same treatment, unless hepatitis is the leading disease, is not indicated in chronic splenitis, where, after the proper use of laxatives, of which calomel is a component, ample success has generally attended the exhibition of one grain of opium, with or without quinia, every four or six hours, according to the requirements, together, in the meantime, with external revulsives and occasional enemata. These remarks, it is trusted, will be sufficient to show that, whilst calomel is one of our most valuable means in the treatment of diseases of the spleen, it should never be employed without the clearest indications and the utmost caution. It should ever be borne in mind that salivation, in a constitution broken down by cachexia, can of itself do no good, and may lead to most fearful consequences.

The mineral acids have proved of but limited advantage in splenic diseases. If any deserves preference, I think it is the nitro-muriatic acid. In the purpuric cachexia, hydrochloric acid has been of service for a short period.

Besides calomel, other cathartics are indispensable to correct the torpidity of the bowels, remove obstructions, and, in some instances, to promote serous evacuations. The best are the warm, resinous purges, or oleaginous ones. After a proper resort to rhubarb or jalap, in combination with the bitartrate or the sulphate of potassa, the bowels should be merely kept soluble from time to time, and not perpetually irritated and teased by a combination of cathartic and tonic ingredients, against which a strong protest should be entered.

The best correctors of the bowels have been such as pil. aloes et rhei; pil. colocynth. composit.; pil. extr. jalapæ; given in doses just sufficient to move the bowels, and seldom oftener than every second or third day. Sometimes, when not contraindicated, the excellent prescription of pilulæ aloes et tart. antimonii will prove a valuable substitute for the blue mass, so rarely admissible in these diseases.

When borborygmi and some tympanitic distension of the abdomen exist, care should be taken to avoid all saline or drastic purges, for fear of precipitating hemorrhage. It has happened that sulphate of magnesia, of so common use in domestic practice, has been followed by such a result in no less than four instances. In such cases, should a purge be deemed necessary, an ounce of oleum terebinthinæ, in an emulsion, or a dose of castor-oil with twenty-five drops of laudanum, will be proper.

During the height of febrile excitement, it will be well to administer the citrate or acetate of potassa *pro re nata;* but in the chronic stages, whenever a diaphoretic effect is desired, an infusion of serpentaria or anthemis nobilis will answer a better purpose. A dose of Dover's powder was sometimes added. Minute doses of tartar-emetic were serviceable in chronic splenitis, where there existed a tendency to pulmonary affection. Care had to be taken to guard against emesis. In other cases, it was best given in combination with other means, as opium for instance.

It is scarcely necessary to add here that narcotics form an important class of remedies in these affections. They hold an intermediate rank between those that have been noticed and the preparations of bark and of iron. Opium given in the pilular form has, after cathartics, not only quieted irritation, but promoted the secretions in an unaccountable manner, and removed cachexia. Morphia answers a similar purpose; but, from observation, solid opium possesses a decided superiority, in this respect, to that as well as to the tinct. opii. Dover's powder is only suited for occasional use; for increased debility is apt to succeed its constant exhibition. The patients, moreover, are subject to the impressions of cold, an objection to which opium alone is not liable. Hyoscyamus and digitalis are both useful, under particular indications.

Ardent spirits, and, indeed, diffusible stimuli of any sort, have pretty generally proved hurtful. It is singular how rapidly the splenic tumour will often harden and enlarge, after a moderate indulgence, sometimes a single drink, of spirituous liquors.

After a proper preparatory treatment, prolonged more or less according to the exigencies, has been premised, and rarely till then, the chief reliance, in a great majority of these cases, must be placed upon quinia and the salts of iron. The exceptions requiring the prompt use of these remedies, grow out of the character and tendency of the accompanying fever or cachexia.

Notwithstanding the unquestioned value of quinia, in affections of the spleen, it can hardly be said to possess the same pre-eminence here that it holds in the congeneric fevers. True, it exerts a marked agency in the parenchymatous tissue of the organ, and induces a rapid contraction of its mass, especially if it be given after the removal of hepatic obstructions, and in the more recent cases; but the reduction often ceases at a limit far from the healthy area, and the tumour may remain there stationary, and uninfluenced even by heroic doses. This remark is appropriable of hypertrophy of the organ, though not confined to it. Lest it should be supposed that these are always instances of incurable enlargement, it should be noticed that, after such signal failures of quinia, a resort to the continued use of chalybeates has been gradually followed by a reduction of the organ to its natural dimensions, so far as that fact could be ascertained by external examination, the disappearance of spanæmia, and a restoration to health. The difference of the action of chalybeates and quinia appears to consist in this, that the one manifests its dynamic effect on the splenic tumours by successive and extensive contractions, which at times cease of a sudden to be reproduced, at an early stage, while the others attain, by a slower but continuous process, a success proportionably greater, not only for the complete restoration of the organ, but the eradication of cachexia. Quinia, while it overcomes periodicity, does not directly improve the blood. Repeated cinchonisms in grave cachexia, have often failed to show any effect on the circulating mass. When, therefore, hæmatosis is promoted under its use, this result must be ascribed to its continuous corroborating influence imparted to the nervous system.

To secure a tonic effect where great debility exists, as in purpura and hydræmia, cinchona is to be preferred to quinia. The mode of administration is in decoction, to be freely drank.

Conceding that large doses of quinia are sometimes necessary in these diseases, and under certain contingencies, yet upon a candid review and comparison of cases, it appears that they possess no greater effect in a majority of these cases than two grains given at intervals of two hours. It has even seemed an error to push the quinia to excess; for, like the analogous instance of ptylasm, sometimes cinchonism has been manifested without any impression on the local affection. This is apter to occur when no preparatory treatment had been premised. Moreover, if the pungent quality of the urine passed within a few hours after the exhibition of a large dose of quinia be the criterion, we have had at times reason to suspect that much of the remedy was discharged by the kidneys. The flow of urine was not increased, and a dry heat was experienced within the rectum.

Quinia should be our chief remedial means at first, and immediately after proper preparatory measures, especially as long as there lurked any periodical febrile excitement; but the time soon arrives when it becomes necessary to combine something else with it, for the further removal of all morbid conditions, and chiefly that of the blood. This desideratum will be best fulfilled by some of the preparations of iron. Were I restricted to either quinia or chalybeates alone, in the treatment of hypertrophy, ramollissement, or neuralgia of the spleen, I should have no hesitation to give the latter the preference. To remove the cachexia attending they have no superior. If, perhaps, quinia acts through the nervous system on the blood, iron appears to have a reversed action.

Having essayed the chief chalybeate preparations in diseases of the spleen, I am constrained tc say that while nearly all of them have been found advantageous, yet the ferri carbonas præcipitatus appeared superior to all others, for the speediness of its action on the sanguineous mass, as also on the splenic tumour. It may be given in doses varying from five grains to a drachm or two, at intervals, say three times a day. It may be combined with quinia, cinchona, or sulphur, as occasion may demand, and the stomach readily retains it. It often shows a decided impression in changing the colour of the blood within a very few days; the lips lose their pallor, the cheeks become coloured, and the eyes animated. It may be well to notice here, that refractory intermittents yield to a combination of præcip. carb. ferri and quinia, that will resist the latter alone. Sometimes the combination of the precipitate of iron with milk of sulphur may be substituted with advantage in these fevers, and upon the whole it appears much superior, in diseases of the spleen, to the sulphate of iron.

Next to the carbonate, and little inferior in efficacy, may be ranked the citrate and acetate of iron, and below these the ferri et potassæ tartras, ferri muriat. tinct., ferri sulphas, and ferri ferrocyanas. Ferri iodidum, and, indeed, any preparation containing iodine, internally exhibited, are rather injurious, and on close observation will be found to favour anæmia. As an external application, the tincture of iodine has proved of considerable advantage in chronic splenitis and in hypertrophy.

The preparations of iron should be persevered with for some considerable time, to derive their full benefit, and it will be often necessary, in the same case, to substitute one in the place of another, till the cure is perfected. In this way, success will often attend the treatment of some of the most forbidding cases.

Next to the preparations of bark and iron, I think most confidence can be reposed in small doses of oleum terebinthinæ, or sulphur, for the removal of chronic splenic disease. The muriate of ammonia has manifested but little efficacy, under my observation, except in cases of neuralgia.

Besides the cinchona, the tonics found most available have been gentian, quassia, columbo, and Prunus Virginiana.

Every means calculated to invigorate the system should be recommended in cachexia. Sea bathing, when practicable, is of paramount importance. A nutritious but not over-stimulating regimen, temperance in food and drink, the use of flannel at the proper seasons, cleanliness, gentle exercise, and regular but not fatiguing employment for the mind and body, must be strictly enjoined in the chronic forms of splenic disease. Where the means of the patient will permit, a residence among the mountains, or voyages by sea, may be advised.

When about to bring this paper to a close, it may be pertinent to notice that these remarks have been based upon personal observations for a series of years, during which a continuous and intense interest was felt in the subject, and that the conclusions arrived at were not adopted fully till after such minute investigations as were in the power of the author, who now desires no other merit, so fas as he has been enabled to proceed, than to prove a faithful "*minister et interpres naturæ.*"

ART. VI.—*On the Physiology of Repose or Sleep.* By WM. H. BYFORD, M. D., of Evansville, Ind.

THE doctrines contained in this paper, although differing somewhat from those generally received are, I think, deducible from well known facts and established physiological principles. Among which are, the capillary circulation, as explained by the elective affinity of the tissues for their pabulum of support contained in the blood; the tissual change, whatever that may be, which is going on in the substance of the muscle and brain during the discharge of their functions; the limited amount respectively of the diverse materials contained in the blood for the support of every kind of tissue, etc. etc. I have long believed the proposition, that the repose of an organ is dependent upon the necessity of repair of the damage done it by the exercise of its function was very questionable, and did not comport with many well established physiological principles. A more satisfactory explanation may be given of the phenomena connected with repose, by supposing that the organs are compelled to cease action because the blood is exhausted of the materials necessary to sustain the textural integrity of them. The whole voluntary organization is subject to alternate action and repose, and it is no difficult matter to prove that the whole mobile portions of the system are affected by similar necessities; these two conditions being inseparably connected with the organization and existence of animals, the fact is pretty well settled, by abundant authority, that the blood contains a limited amount of the several constituents for the composition of the organs and support of their functions in a state of certain preparedness for the ready reparation of tissue undergoing waste from a state of activity. That the characteristic materials for the support of the several functions must respectively be present, each to a limited degree, I think is almost self-evident. The completeness of functional action of each depends, *cæteris paribus*, on the amount of its supporting substance. When there is an abundance of urea, or any of its generating compositions, there is promoted the peculiar healthy secretion of the kidney. So, too, when the blood is rich in the phosphatic fats, or their generating compounds, damage done to the brain may be readily repaired, and this organ be capable of an extraordinary amount of exertion. If the nitrogenous elements are present in plenteousness, the muscular capability is greater. If, however, the ingredients for the support of the function and repair of an organ are deficient, there must be deficiency in its functional capacity. Deficiency of the phosphate of lime gives origin to rickets. The hen does not form a shell for her eggs without lime; and when this ingredient is deficient in quantity in her blood, the shell, although it may contain some of this material, there is not sufficient to render it hard. We are justified, I think, in concluding that all organs are equally dependent for the discharge of their functions—the muscle that of contraction, the brain thought, etc.—upon the presence in the circulating fluid of the essential elements of their own composition, or the material for the support of their functions. And we should recollect that in the textural changes originate the primary steps of elimination or excretion, and that if one of the organs, having the same composition as the whole muscular system or brain, act longer than the quantity of material present in the blood for its support justifies, the blood becomes more or less completely exhausted of that particular substance, and the function must cease until further elaboration by the blood replenishes the requisite pabulum for its continuance.

It is in this way that the blood may become impoverished by protracted and wearing exercise of muscle or brain, and the individual become anæmic. The question then arises: Does this blood exhaustion take place during functional action, by keeping up the repair of the tissues as fast as worn, or during the hours of repose? Or when is the time for textural renovation? I am, as before stated, of the opinion that blood exhaustion and repair of tissue take place simultaneously, the one as a necessary concomitant, if not consequence, of the other, during functional action. Repose or sleep involves the whole voluntary organization, which in man, in point of quantity, is largely more than all the rest of the system; and hence it is but reasonable to conclude, the constituents of its composition compose the largest share of the organic compounds of the blood, and the great business of organic life is to keep it supplied with the pabulum of support. There is reason to believe that voluntary action results only from intimate molecular movements, similar to those going on in the involuntary system. What is meant by this is, that minute molecular or cell change, of a character corresponding, in a general way, with what occurs in secretion, excretion, and other organic movements, obtains in the intimate structure of the muscular and nervous tissues belonging to the voluntary system; and that in this vital change is generated the voluntary force and all its antecedents, as thought, will, etc.; and this cell change carries on simultaneously destruction and repair of the tissues to an exactly commensurate degree. The contractional behaviour of the voluntary muscle is essentially the same as that of the involuntary; and hence there is functional necessity for the same kind of nutrition.

Let us examine the action of the two, so as to arrive at their similarity of action in a general way. The heart, as a muscle, contracts every fibre simultaneously, and then they all rest together for only an instant of time. This is the case perpetually during our life. Repair of its tissue must take place during this short period of repose, or not at all. The fibres of the muscles of respiration have equally a short and definite duration of action and repose; so, also, have those of the alimentary canal, one circular fibre acting successively after another, producing vermicular action. Now, a close observation of the action of the voluntary muscles shows us that, in their strongest and most energetic action, if it is more than instantaneous in duration, there is alternate contraction and relaxation of the fibres composing the mass of the contracting muscle; so that although the muscle may persist for a length of time in action, the fibrilla, taken separately, have but instantaneous power. And furthermore, that even the whole of a fibril is not contracting at the same time. (Todd and Bowman.) Now, judging from what takes place in the involuntary and constantly acting muscles, there must be plenty of time, during the action of muscle, to repair its tissue. There are many circumstances mentioned in Todd and Bowman's Physiology which favour the opinion that voluntary muscles are undergoing waste and repair during action, and it is highly probable that these conditions correspond to the contraction and relaxation of the individual fibrilla; probably, contraction, and waste, and relaxation, and repair, being respectively contemporaneous. Recurring to the involuntary muscles, there seems to be no other time for repair than the momentary repose succeeding action. If, then, repair can be effected in the period of instantaneous repose, between the different strokes of the heart for instance, there is also plenty of time for their repair in fibrillar relaxation of the voluntary muscular system. Indeed, why, if not for this purpose, is this alternate relaxation and contraction of the fibrilla of the mass of acting voluntary muscles? Why do they not all remain rigid as catgut? This last condition would better subserve the purpose of physical force.

There is, most likely, a difference between, at least in the circumstances under which they occur, the nutrition of increment and repair of tissue; the first taking place during sleep proper, and the last, in case of the muscle for instance, during fibrillar relaxation. That the processes necessary to place the tissue back in the same condition as before its change from functional action is not identical with the growth or increase of amount, nor accompanied with the same condition of the circulation of the blood, is probable from many well known facts. Growth is apparently closely connected with general repose or sleep. During the time of life when growth is most rapid, most sleep is required. Fœtal life seems to be almost nothing but protracted sleep; and this is the period of most rapid growth. Childhood requires more sleep than mature age. Repair of tissue from the damage caused by action, on the contrary, is at a time of life when much less sleep is required. It is well known that the young cannot bear the same fatigue as the mature, while the latter requires much less sleep than the former. If these facts prove anything, it is that while the greatest growth is going on, the repair of the tissues from exercise is not efficient and energetic.

In the discharge of their functions, organs require and receive a larger supply of blood than when in repose, and it is also passed through them more rapidly; whereas, in the condition of increase of bulk, the circulation need not be so much increased—in fact, according to Dr. Carpenter, the blood moves slowly and sluggishly in the capillary vessels under these circumstances. The highly filled and relaxed condition of these vessels after exercise is highly favourable to increment during succeeding repose, and, when carried to a great extent, would—especially if intermitted often, and the rest continued long enough—conduce to rapid growth, and even hypertrophy where the individual had obtained his growth in general. In examining the subject in relation to the brain, it becomes plainer that repair must take place during the active operations instead of during the period of repose of the organs. Many reasons induce me to believe that this is the case with the brain—a renewal of substance in place of the waste that acknowledgedly takes place during the active condition of that organ; for the protracted continuance of mental labour with equal efficiency for a great many hours, abating in none of its energy from the time of the commencement of labour, the will not flagging in the least, in favourable instances, for even two or three days without rest, I need but mention that there have been many notable instances. If repair of tissue, which is undergoing wearing labour and damage from functional exercise, was not simultaneously going on, the action of the organ should grow progressively weaker until it very gradually cease in complete repose. The maintenance of unremittingly vigorous mental action of the same kind is incompatible with the truth of the supposition that gradually increasing damage is being done to the acting organ. We might as well expect a bow of given tension to retain the power of throwing an arrow the same distance a thousand times, when, from the first time it is discharged, we commence, and at each succeeding effort that was made with it, take a small shaving from its elastic points.

The increased capillary circulation in the part which is always observed during exercise of the brain, and which continues to increase when this organ is severely taxed, until finally it may amount to real vascular disease, would tend, by carrying the means of cerebral disintegration in greater quantities into its texture, to give rise to augmenting waste, bring about more rapid cerebral destruction, and in no conceivable way compensate for the injury thus accomplished. But, supposing the waste of substance is to be repaired as fast as produced, we can see at once the cause and effect to be accomplished. The persistent demand of the tissues, by their elective attraction, for the pabulum of functional support upon blood to some extent exhausted by having these materials abstracted for this purpose, must necessarily pass this fluid through the capillaries more rapidly to obtain a sufficiency to keep the functional action up to the same grade; and, so long as this can be effected by the additional velocity of the capillary current of the blood, so long the function is unimpaired. But the disturbed circulation often produces headache in the case of the brain, and fatigue in the muscles. It is a fact that may be verified by slight attention to the subject, that after a certain time—varying with the general condition of the blood—in protracted and unremitting exercise of any organ, the capillary circulation in it becomes progressively more rapid until rest or mischief results. In impoverished states of the blood this takes place very soon, and, in many instances, quickly incapacitates the individual for exertion. According to the theory that the blood merely carries the means of destruction to the tissue of an organ acting, there need not be any increase of circulation; the same degree would be sufficient from beginning to end. In a rich and healthy condition of the blood, a uniform and moderate condition of the capillary circulation may be maintained for a considerable time without inconvenient sensations in the head or fatigue in the muscles. If damage was going on unrepaired during exercise, there ought to be more uniformity in the time the same individual could bear exercise without inconvenience on all occasions; and also when he must desist from action, the parts being susceptible of damage to a certain extent only. But it is well known this is not the case; that capability for action, protracted, unusual, and unremitting action, depends more upon the quality and condition of the blood than any state of the organ (so that it is within the range of health), I think is a necessary inference from the above facts; and that this capability is imparted by the blood in constantly renovating the tissue, is, I think, equally obvious.

Henlé, as represented by Carpenter, "surmises from the comparative aspects of the external and internal layers of the cortical substance (of the brain), that there is as continual a succession of nerve-cells as there is of epidermic cells, their development commencing at the surface, where they are most copiously supplied by the bloodvessels from the pia mater, and proceeding as they are carried toward the inner layers; and this process is perfected where they come in immediate relation to the medullary or nervous tissue. This change of place is probably due to the continual death and disintegration of the mature cells where they are connected with the fibres, and the equally rapid generation of the new cells at the surface; the newly-formed ganglion-cells, carried inward in precisely the same manner that the epidermic cells are carried outward," and no doubt to fulfil a purpose as nearly allied as the structures and functions of the different organs in which they are found will admit, subserving in both cases the essential functional purposes of each organ. If we take this surmise of Henlé to be true, it all but demonstrates the constant and immediate regeneration of the tissues so soon as disintegration is effected by functional action, and that repair, so far as necessary, is going on during the active state of the organ. The analogy between the repair of the cortical substance of the brain—the essential of which are these ganglion or nerve-cells—and epidermis, is very appropriate; the essential and principal constituent of both are cells, and in each the new cells originate, so far as can be observed, on the surface where the nutrient plasma is most abundant, become progressively developed, and are matured as they approach to, or arrive at the point of functional completeness; in the case of the epidermis, from the cutis vera to the external surface in the brain, from the pia mater externally to the fibrous tissue internally. In the first case, they are hardened and desiccated to a certain extent, and for a time defend the skin from the effect of external rudeness; in the second, the change of force of cell-development or destruction or both, most likely by the oxygen in the blood, to *vis nervosa*, is brought about when the function of the old cell is succeeded by the new, until the material in the blood adapted to their renewal is more or less completely consumed, when the function of the brain is carried on with difficulty; rest, blood-development, and renewal of the cell-generating material in that fluid succeed, when its functions may be renewed, &c.

Upon the supposition that damage was being done, but not repaired until repose takes place, we ought to find disintegration and death of cells, but no regeneration of them—no transition from the partially developed or nascent state to the mature cell; and the mature ones ought to become less numerous during mental labour, and be regenerated only while the brain was in a state of repose, and then become more numerous. Were this the case, it would be unlike anything that occurs in any function that may be observed, for the rule is—and I believe it is without any known exception—that functional processes are all inseparably connected with the constant death, disintegration, and development of cells. No diminution of this entire series of cell-change occurs until there is cessation of functional action in the parts concerned.

It is not likely that any intelligent physiologist of the present day will, on metaphysical grounds, deny that there may be the same simplicity, the same general *plan* of cell-change to elaborate the mental impress upon the physical organization as produces the secernment of bile, or protection of the skin, by building upon it an epidermis. Nor do all, or any of these processes cease while functional manifestation continues. This seems to be the universal condition of functional action. I think it follows that the performance of function in any organ whatever leaves no deficiency of structure, or vital damage to the powers of the acting organ, but keeps up perfect tissual integrity throughout, and consequently no repair of their solid structure is to be performed during repose; all the rest of the voluntary system is more under the influence of the will than the brain.

The will may determine the repose of the voluntary muscular system during the waking condition—indeed, an effort of it is necessary to call the latter into action. Sleep, therefore, is not necessary to muscular repose, but the muscles also are at rest in this condition, while the will may prompt to action, and direct certain other—and, in fact, most of the other cerebral faculties or functions. It cannot command the brain to enter a state of repose; but the brain, however, may keep itself aroused to persevering action while the material for its support in the blood is abundant, for many hours without any abatement of energy. This, I think, could not be the case, if the supposition was true that damage ensued from its exercise. On the contrary, a diminution of its energies, commencing early, would progress gradually until its action ceased. So soon as the blood is to a certain extent exhausted, this power (the will) has less control, until a continuation is impossible, and the individual inevitably sleeps. The reason why he does not gradually go to sleep, or the energies of the mind do not gradually flag for some time before they are overcome, is that—even after the quantity of its supporting material is much diminished in the general mass of blood—the capillary circulation is increased sufficiently to keep up a supply to the organ of the needed material. The capillary circulation and general vascularity thus occurring are the causes of the throbbing headache of fatigue. This increase of vascularity may be rationally explained by the doctrine of capillary circulation, as given by Williams, Carpenter, and others. The tissues attract the blood containing the material for their renovation, and forward it, after these are abstracted, to the venous radicles as fast as they need them for support. Being in a state of activity, more of these materials are needed than in repose, more of the blood must be subjected to their elective influence, and partially or wholly exhausted. The pabulum of support of each organ and function when ready, or as nearly so as it may become before being submitted to the elective affinity of the tissues for which it is designed, is distributed throughout the whole of the circulating mass, probably in equal proportions, admixed with every other of the constituents of this fluid; and before the blood can be exhausted of the pabulum of any one of them, it must be passed through the capillaries of the tissue to which it is adapted, perhaps frequently, every time the blood becoming more and more meagre in it. During this process it is poured back frequently into the common reservoir the heart, and mixed with the richer blood, and thus makes the whole poorer progressively. This continues until, in the ordinary velocity of the capillary current, there is not a sufficiency of the essential brought through the capillaries of the organ to keep up its functional activity, and the blood must be passed through more rapidly. The elective affinity of the acting tissue accomplishes this, being the same under a given degree of exercise, and attracting, in all states of the blood, the same quantum of nutritive or supporting substance. When the blood is poorer, the attraction for the portions respectively brought under its influence ceases in a shorter time, and consequently the elective affinity is shifted from the portions operated upon toward those contained in the arterial radicles with more rapidity, and thus passes the whole through into the veins in increased quantity.

The less rich the blood becomes by constantly parting in this manner with the supporting material, the more rapidly will it be passed to the heart, until the pulse may be quickened very considerably. The whole circulation, as well as the capillaries of the parts in action, is excited. It will be seen that a continuation of this process will exhaust the blood to an extent incompatible with the further continuance of functional action. There is not enough of the material to support it. From the inability of the organs to procure the pabulum necessary, they cease to act. Their cessation is preceded by many of the disagreeable sensations caused by an irritated circulation and uncommon flow of blood to the part. Improper continuance of exertion under such circumstances may lead to congestion and inflammation.

From the view here taken of sleep, it falls into the category with the other recuperative necessities of the system—as hunger, thirst, *besoin de respirer*—and, like them, depends on the state of the blood, and expresses a *peculiar* impoverishment of that fluid—not from want of water, of more food merely, or of oxygen, but for want of material for the support and formation of the nerve or ganglionic cells of the cortical portion of the brain; and in order to the formation of such material, there must be food introduced containing it, and all the blood-changes gone through with which place it in a state of preparedness to respond to the draft made upon it by the elective affinity of the acting, and consequently changing tissue, all of which requires time, and cannot be kept up at a rate rapid enough to dispense with periodic repose. Some persons, whose assimilating powers are peculiarly good, can do with very little, while others, less favoured in this respect, require considerable. We have many evidences that individuals who can abstain from sleep for an unusual time, under great exertion, are also persons of more than ordinary assimilating energies.

Nature, in the case of hibernating animals, places the system in such a state of complete inactivity as to require very little nutriment to support them. Probably, an amount that would not support them under active exercise for one week is enough, in this inactive condition, for several months. In protracted exercise of the whole voluntary system, or the brain only, the composite quality of the blood is so altered as that it becomes unfit for a longer maintenance of the same kind of action. Circulating as it does through the whole system, it produces only upon the appropriate representatives of the deficient material the sensation of fatigue and languor, and after a certain time if these sensations are not heeded, the tendency to repose cannot be withstood, it becomes overwhelming, and nature irresistibly places herself under appropriate recuperative circumstances. In spite of the most strenuous efforts of the will, the individual sleeps. Just as an attempt at voluntary efforts to suspend respiration fails to effect it, so does efforts of the will fail to continue exercise beyond a certain time. The increasing alteration of the blood in both cases makes irresistible demands upon the automatic powers of the system. In case of voluntary suspension of respiration, the blood is rendered unfit for the maintenance of the active functions, but the fact is made known through the respiratory organs, particularly by an undefinable and irresistible impression upon them as the proper representatives of the blood change, or as being the parts in which such change ought to take place. If, however, the function is voluntarily continued in suspension, and the alteration of the blood goes on increasing, unconsciousness resulting from it supervenes, and puts a salutary check to the proceeding, when respiration is again established, and restores the required state of the blood. So, also, after a few deep and rapid respirations, the blood is changed in another way, and several very slow and partial ones restore it back to the right state for ordinary functional use.

Although this is probably the most striking example of alteration of the composition of the blood by discharge or suspension of function, it may be taken as an illustration of the idea that I wish to convey. It, like the voluntary functions, takes from and adds to the constituents of the blood—is restorative and exhaustive; neither of which processes can be carried to excess without being brought to a stop by guards appointed by nature. There is this difference between the particular changes produced by the two: in voluntary exercise the blood is exhausted of a nutritive material, and, so far as the organ acting is concerned, receives back an effete substance; in respiration, the blood receives the replenishing material, and is exhausted of the effete. If we regard oxygen as one of the supporters of structural disintegration—which it seems to be—and a necessary attendant upon it, the difference is not so great after all.

I think that there is sufficient analogy between the repose of the voluntary system, the brain particularly, and the fatigue and other sensations which precede it, and other recuperative wants and sensations of the system, to regard it as proof that it comes not from the state of the organs, to which the sensations delusively refer, as a primary condition, but as one superinduced by the general condition of the blood, and removable only by giving time for the elaboration, by the various sanguifying processes of material, to restore the circulating fluid to the right state for further continuance of action in the organs. How long a time must elapse for the completion of these processes may be necessary, is owing to the assimilating capacity of the whole organization, a healthy and rich condition of the blood, or otherwise. "Thin blooded" and weak require more repose than the strong and robust.

That a desire and necessity for repose or sleep arises from the condition of the blood primarily, and not from damage sustained by the organs under exertion, is rendered probable further by the almost immediate effect of food taken into the stomach in a state of weariness and lassitude. At noon, when the weary labourer is almost prostrated by the effect of his hard exertion, a hearty meal buoys him up for several hours longer, although he may have rested only long enough to eat. Could he be so refreshed by rest alone four times longer?

How can we account, then, for the change, but by its influence upon the blood and its circulation? I think it acts, at first, much in the same way as diffusible stimuli; and, secondly, by affording nutriment for the favourable composition of the blood. Stimulants, for a short time after being taken, relieve lassitude and languor, not by introducing anything nourishing into the blood, but by increasing its stimulating qualities causes the heart to act more frequently, and thus deliver into the capillaries a larger amount of this fluid; so that there is less elective exertion required by the tissues, as they have a larger amount of blood from which to extract the needed nutriment. This soon subsides, however, and leaves the languor and fatigue increased, as might be expected, from the exaggerated functional activity and consequent abstraction of a plenteous supply of nutritive material.

It may be objected that cell change is too slow, and that if the action of the organs depended upon the change of tissue accompanied by their decay and repair, it could not be so rapid as it sometimes is. But it will only be necessary to remember with what rapidity the secretions are sometimes produced, to see that this is not an insuperable objection. They are, I believe, considered always to be elaborated by cell change.

The rapidity with which some of these are produced, under certain circumstances, is quite astonishing. So much is produced in a short space of time, as that the elasticity of the tubes leading from the gland, reacting upon the pressure of the fluid within them, throws it several feet. Saliva, under the stimulus of mastication, spirts from the Stenonian duct some distance out of the mouth in forcible jet. I once knew a gentleman who had parotid fistula just below the lobe of the ear. During the time he masticated his food, the saliva often spirted in jets upon his clothing, unless something was interposed between them and the opening. This was always the case, he said, after long fasting, but not when he ate with ordinary regularity. The female breast, likewise, produces several ounces of milk, in as many minutes, under the stimulus of the child's tongue. These instances, I think, show a rapidity of cell change sufficient to produce all the results of nutrition in the muscular or nervous tissue.

The notable and universally recognized habit of the body of increased vascular action, toward evening, may be explained by this theory. After the voluntary functions have been supported for several hours, the blood becomes poorer in the materials for this purpose, and hence must be circulated through the organs more rapidly, in order to impart the requisite amount of nutrition to them, to sustain their functions in undiminished vigour. This is accomplished, as above explained, by the nutritive affinity between the tissues and the material in the blood containing the same. A smaller amount of this pabulum in the same quantity of blood, this fluid is detained a less time before it is exhausted, as far as may be, and crowded forward into the venous radicles, and replaced by new portions necessarily with more rapidity. From this increased capillary rapidity results the general vascular excitement. In confirmation of this explanation, I may remark that I have observed the effect of watching all night on my own system, in every instance (and these were several); the circulation was more rapid in the morning succeeding the watching than the evening preceding it.

I have not, as will be observed, hazarded an opinion as to the immediate cause of the increased elective affinity of the tissues under exercise. I think, however, that we are justified in considering it as the result of the stimulus of the will, acting through the voluntary nerves upon the branches of the ganglionic system, distributed with the vessels in the tissues. Not, perhaps, a voluntary power particularly, but merely a nervous stimulus, such as may also arise, and no doubt does arise, under certain circumstances, from reflex stimulus unrecognized by the brain, or even magnetic, galvanic, electric (and perhaps tactual) influences.

The views contained in this paper relative to the subject of sleep, may be summed up briefly as follows, viz:—

1*st.* The blood is composed—in addition to the materials necessary to the maintenance of its own integrity and identity—of the substances required for the support of the functions and composition of the different organs (or classes of organs), in a distinctive, if not separate condition, each appropriable only to the one purpose, viz: that of one organ, or class of organs, of a similar character, in the discharge of its or their functions.

2*d.* These materials are prepared, particularly in their distinctive capacity, by means of changes going on in the blood, as it circulates through the organs.

3*d.* They cannot be present to an unlimited extent (in the very nature of things), but have a certain grade of relative as well as absolute quantity, under the same circumstances.

4*th.* Exercise of any of the functions abstracts from the blood, according to the rate of activity, these materials to a certain amount, when they must cease until the blood changes occur that replenish this fluid with the abstracted material.

5*th.* The sense of fatigue and want of sleep is analogous to, and arises from, the same general cause—the condition of the blood, as hunger, thirst, want of respiration, etc.

6*th.* Sleep, or repose, is caused by the condition of the blood, and not damage done to the organs during exercise.

7*th.* Repair of tissue necessary to keep the organ in a capable condition, the necessity for which is the result of their functional action, takes place during action.

8*th.* Hence, sleep is not necessary for such repair after their exercise. In fact, they are not left in a deranged condition.

9*th.* Sleep and repose of all the voluntary organs are necessary to replenish the blood with the material for their support.

10*th.* The nutrition of increment takes place during repose, aad is different from the nutrition of repair which occurs during action.

ART. VII.—*The Causes of Fever.* By ISAAC CASSELBERRY, M. D., of Evansville, Ind.

THE causes of fever are generally divided by pathologists into two kinds—the *predisposing* and the *exciting.* The former are all those external and internal causes which tend to lessen the power of organic resistance to the influence of morbific agents. The latter are those causes which produce actual disease by certain changes in the quality and quantity of the blood, and the alterations of the solids consequent thereon.[1] There exists, however, no absolute difference in the nature of these two kinds of morbific causes. The same agent may manifest its influence on the human organism either as a *predisposing* or an *exciting* cause of fever, according to the degree of intensity with which it acts, and the previous condition of the organism.

SECT. I. *Of Predisposition and Predisposing Causes.*—When, either from a general condition of the organism, or some inappreciable change in the elementary constituents of the blood, the organism is especially susceptible to the influence of morbific causes, a predisposition to disease is said to exist. This predisposition may be either *acquired* or *hereditary.*

As the human organism is continually under the influence of causes which have a tendency to change and terminate its actions, life would only be ephemeral in its duration, and oppressed by constant disease, if the human organism were not endowed with the automatic nervous power of resisting, to a certain degree, the influence of injurious causes.

It is by the aid of this resistance that man is enabled to live through a series of years amidst a multiplicity of causes which conspire unceasingly to his destruction. In relation to the degree in which this power of resisting injurious forces is possessed by different individuals, there exists great diversity; and hence the various degrees of the altered condition of the blood which constitutes a predisposition to fever among different individuals. Thus, the prick of a pin in one individual will cause a manifest change in the elementary constituents of the blood in the tissue; in another, syncope; in a third, convulsions or tetanus; and in a fourth, scarcely any perceptible effects.

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[1] Linton's Pathology, p. 28.

There exists an organic predisposition to disease in some individuals wholly independent of acquired causes. This organic aptitude to disease is induced by a peculiar conformation of the cellular arrangement of the component elements of the blood in the organism, by which they more easily assume diseased action in one individual than in another. It is well known that the most healthy and robust individuals, in *appearance*, are often the first victims to a febrile epidemic. The vigorous and healthy are often prostrated by the pernicious causes of the paludal forms of fever, while the feeble and valetudinarian enjoy an exemption. With regard to acquired predisposition to fever, observation furnishes us with an extended variety of facts.

Every cause capable of deranging the normal state of the organism, may, when acting with moderate force, produce an altered condition in the component elements of the blood in one or more tissues, and thereby produce a predisposition to fever in the organism, requiring only some further exciting cause to evolve febrile disease. The impression of every morbific cause, on whatever part of the automatic nervous system primarily made, is, in the first place, conveyed to some particular tissue or organ, according to the force of the impression and the automatic nervous condition of the various organs of the system. If this be correct, it is manifest that if the morbific impression, thus conveyed to an organ or structure, be too weak to establish a sufficient degree of morbid automatic nervous action to produce general derangement of the capillary functions, or a febrile paroxysm, the effect will only be a slight degree of insulated functional derangement, which, though not manifested by any feeling or appearance of ill health, is still an incipient link of disease, and wants only some additional disturbing force to enable it to put in motion a train of morbid actions. How greatly mere functional derangement of an important organ aids the cause of fever in developing disease, is often conspicuously illustrated by the influence of digestive derangement in the production of fever. Let but this citadel of the animal organism languish, and the enemies of human health will speedily attack the outposts, and make an easy conquest of the whole. Hence, of all the precautions which those who visit insalubrious climates may be required to adopt, the avoidance of everything which is calculated to derange the digestive function is perhaps the most important. By a well-known law of the animal organism, every agent, how deleterious soever it may be, gradually diminishes, and finally almost destroys the susceptibility of the automatic nervous system to its influence by long continued or repeated action. Hence, every agent will manifest its operation with a promptitude and intensity proportionate to the degree of previous immunity to its influence.

It is this state of the automatic nervous force which causes the difference of predisposition to endemial forms of fevers between the acclimated natives of insalubrious regions and strangers arriving from northern latitudes. This variety of predisposition depends in no degree on a want of organic vigour or general health, but on the degree of automatic nervous susceptibility. The robust and healthy are, in general, as much under its influence as the weak and infirm. By a gradual or habitual exposure to morbific agents, the human organism loses insensibly its automatic nervous susceptibility to their influence. When such a change is effected by the combined operation of climatic and endemial morbific agents, the system is said to be acclimated, and the individual, thus acclimated, enjoys a comparative immunity from the diseases of the climate.

High atmospheric temperature exercises a very powerful influence in the production of disease. Long continued exposure to an elevated degree of solar heat tends very considerably to produce a disturbance of the automatic nervous force, and, in consequence of this, a deranged action between the elementary constituents of the blood, and thereby diminish the force of their automatic nervous resistance to the disturbing force of morbid impressions.

It is a well established physiological fact, that atmospheric vicissitudes have a decided influence upon the circulation of the blood in the external capillaries. When the atmospheric temperature is low, the atmosphere is more dense and heavier, and by its pressure retards the capillary circulation; and when it is high, it is rarefied and lighter, and admits the blood to circulate more freely, because it offers less resistance by pressure to the introduction of the blood into the capillaries by nutritive affinity.

A certain degree of temperature is necessary to the normal performance of the organic processes in the cutaneous capillaries; and when it is increased, these processes are accelerated; and when it is diminished, they are retarded. Hence, when the temperature is increased to a certain degree, the cutaneous secretions are augmented, because there is more blood in the cutaneous capillaries, and its different component elements are more abundantly transformed. The capillary functions can be increased only to a definite limit, beyond which diseased transformation must ensue. So long as the automatic nervous force can maintain a normal relation between the elementary constituents of the blood in the capillaries, augmented normal transformation of these elements may transpire; but whenever this nervous force loses its controlling power over these elements, morbid transformation will be produced. Then the effete elements of the blood cannot be removed by a secretory action out of the organism in the form of perspiration, &c.; and the nutritive cannot be transformed and attracted to the different tissues of which they are designed to compose ultimate elements, because they are not free of effete constituents. Diseased action between the different elements of the blood is present. They are no longer governed by the controlling influence of the automatic nervous force; their normal transformation cannot take place; they aggregate in the capillaries in obedience to the laws of chemical affinity. The cutaneous secretions may be increased, decreased, or prevented; the skin may be either hot and dry, or cool, and bathed in perspiration.

A low atmospheric temperature retards the functions of the cutaneous capillaries by diminishing the intensity of the automatic nervous force which exists between the different elements of the blood in the form of nutritive attraction and effete repulsion. The elements of the blood may be normally transformed; but this process takes place slowly. The quantity of blood circulated in these capillaries is consequently diminished in a proportionate degree to the state of the atmospheric temperature, and the quality of the blood. For the circulation of the blood in all the capillary vessels is produced by the automatic nervous force, and maintained more by the controlling power of this force over the transformations of the different elements of the blood than by the mechanical force of the muscular action of the heart. If this be true, when the transformations of the elements of the blood are slowly produced by the force of any disturbing cause, diminishing the normal influence of the automatic nervous force, the quantity of the blood circulated in the capillaries must always be diminished in a manner proportionate to this diminution. Many pathological facts may be adduced in support of this position.

Sect. II. *Of the Sources of Morbific Causes, and their General Character.*—A certain quantity of heat is indispensable to life throughout the whole range of organized beings. Every animated being possesses an organic power to generate heat, and to resist, to a certain degree, the physical laws of its distribution, and, in consequence, to maintain its peculiar temperature when placed in a medium either many degrees below or above its own temperature. The constant and rapid production of heat by the organic forces keeps up the natural temperature of the animal organism, although surrounded by a medium which abstracts its heat with great rapidity. Such, indeed, is the evolution of heat by the human organism, that an atmosphere of the temperature of 98° is generally oppressive and unpleasant by the feeling of warmth which it causes, although, at this temperature of the air, no heat can be communicated by the surrounding atmosphere to the organism. The temperature most grateful and most invigorating to the human organism, ranges from 60° to 65°. This degree of temperature abstracts the heat of the organism in about the same proportion in which it is generated in the healthy state of the organism; and this degree of temperature is, therefore, the most congenial; for it neither exhausts the organic forces, nor gives rise to unpleasant symptoms. There exists, however, considerable diversity in the human organism in relation to the power of supporting the extremes of temperature. This depends not only on the original vigour of the organism, but also, greatly, on the influence of habit and modes of living. An individual endowed with a vigorous organism and with habitual good health, will endure a degree of cold, without any unpleasant sensations, which, to one of an enfeebled and exhausted organism, will be a cause of painful sensations.

Habit, in relation to previous exposure, has a powerful influence in varying the effects of temperature on the human organism. The same temperature will cause sensations of cold or great warmth accordingly as the organism has been previously exposed to a high or low temperature. Whenever the surrounding medium abstracts the heat of the organism more rapidly than it is generated by the regular actions of the organism, the sensation of cold will be produced; and the intensity of this sensation will always be proportionate to the rapidity with which the heat is abstracted, and the feebleness of the heat-generating power of the organism.

Physiological Effects of Cold.—When the temperature of the human organism is so low as to give rise to the sensation of cold, its immediate effects are—

1. *Diminution of the functions of the cutaneous capillaries*—because the automatic nervous force which is manifested between the different elements of the blood in these vessels, in the forms of nutritive attraction, effete repulsion, animal heat, animal electricity, &c. is weakened, and the quantity of the blood circulating in these vessels is thereby diminished. Hence, the cutaneous surface often presents a pale, shrunken, dry aspect, by exposure to cold, even when no pathological condition is induced between the elements of the blood.

2. *Diminished force of the muscular action of the heart and arteries.*—This effect upon the heart and arteries must follow as a necessary consequence of the weakened force of the automatic nervous influence in diminishing the force of the nutritive attraction and effete repulsion between the elements contained in the cells of the blood. These cells do not undergo their normal mutations with the same rapidity as when the automatic nervous force acts upon them vigorously. Hence the diminished force of action of the heart and arteries is manifested by smallness, weakness, and slowness of the pulse.

4. *Diminished sensibility of the external parts, passing by degrees throughout the whole organism.*—This condition is produced by the influence of cold in the diminution of the organic processes. The growth of vegetables, and the maturations of their seeds, may be retarded or accelerated by the increase or diminution of the atmospheric temperature. The same is, to a certain degree, true in regard to the organic process in the animal organism. But these processes are not, however, as much influenced by the vicissitudes of temperature as the similar processes in the vegetable; because of the heat-generating force of the automatic nervous system in the human organism. Every sensation is produced by an impression made on the automatic nervous force of the tissue or organ impressed, by which this force is increased, decreased, or perverted, according to the force of the disturbing cause. Hence, the varied degrees of sensation excited by atmospheric vicissitudes, according to its duration and intensity, or its medium and mode of application. The

impression of cold may be weak, transient, and invigorating, or it may produce a torpor of all the organic processes, or a lesion of tissue.

5. *Cold often increases the force of the organic processes:*—In order to exercise this influence upon the human organism, it must not be either too intense or too moist. When the atmosphere is cold, it is more dense, and often almost wholly free from moisture. In this state it is invigorating to the human organism.

The reason is obvious. The lungs receive by absorption from the atmospere more oxygen at each inspiration. This increased quantity of oxygen increases all the organic processes. An additional amount of food is required, and an increased quantity of the elements of the blood are elaborated. All the organic processes are more active. Hence the aphorism of Hippocrates, "*Hieme ventres calidorus sunt.*" The appetite increases, and the process of digestion is performed more rapidly in moderately cool and dry weather than in warm.

We are informed by Xenophon that the Greek soldiers, on their return from Asia, were exceedingly harassed by the most severe sensations of hunger, while passing the snow-covered mountains of Armenia, although they were allowed their ordinary rations of food. These facts are supported by the observations of travellers in northern latitudes.

Moist cool air does not have the same invigorating effect on the organism that cool dry air does; because the atmosphere is, when dry, a non-conductor of heat and electricity, while, when moist, it is a positive conductor of both. When it is brought into proximity with the cutaneous surface, which is endowed with animal electricity, which is negative, the positive electricity of moist air, being more abundant, attracts the negative animal electricity as fast as it is generated. The superiority of the attractive force of cool moist air, by increased quantity, over the force of animal heat and electricity, transmits this heat and electricity into mechanical force, by which the moist air is repelled from the cutaneous surface. The continued action of the superior force of the moist air, however, disturbs the organic processes of the cutaneous capillaries, because of the influence the abnormal state of the animal heat and electricity exercises over the other organic functions of these vessels. The secretions of carbonic acid by the lungs, and that of the azotized elements of the transformed tissues by the kidneys, is often increased by the action of cold on the cutaneous glands. There is less than a normal quantity of blood circulating in the external capillaries, and an increased quantity circulating in the capillaries of the lungs, kidneys, and liver; the blood is in a normal condition, the cells containing its elements are more abundant, and, being in a normal state, are normally transformed. Hence, the secretions from these glands are more abundant than before the derangement of the capillary circulation.

Cold diminishes the action of the organism; for, although, when moderately and transiently applied, it is generally followed by phenomena attributable to a stimulating influence, yet these are not the immediate consequences of the low temperature; but they are caused by increased action of the organic functions of the tissue or organ after the temporary reduction of their activity by the cold. When an agreeable glow and an augmentation of the general vigour is experienced after leaving a cold bath, it arises not from the stimulus of the cold, but from the temporary depression which the cold water exercises upon the automatic nervous force of the cutaneous capillaries. As the quantity of blood in the capillaries always depends on the activity of the cellular mutations between its elementary constituents, so, when the influence of cold, in whatever mode applied, retards these changes, it must diminish the quantity of blood in the capillaries, and, as a necessary effect, all the organic functions. But the blood in the capillaries, though diminished in quantity, is normal in quality. As the influence of the cold upon the automatic nervous force is removed, this force gives to the diminished quantity of the blood in the cutaneous capillaries the same organizing force as when a normal quantity of blood is circulating in them. Hence, all the cellular mutations are produced with increased celerity, because of the normal state of this nervous force, and the normal but diminished quantity of the blood. The blood in the arterial extremities obtains admission to the capillaries in a quantity proportionate to the rapidity of the cellular mutations between its elements. As these changes are accelerated, an increased quantity of normal arterial blood, rich in nutritive elements, is attracted by nutritive affinity into the external capillaries; all the organic functions of these vessels manifest increased vigour and accelerated activity; the individual feels an agreeable glow over the surface, and an augmentation of the general vigour of the whole organism; he perspires more freely, breathes more comfortably, regards his avocation and associations more pleasantly; his physical functions are performed more perfectly, and his moral attributes glow more brilliantly.

6. *Cold as a morbific agent.*—Cold is the most common and frequent of all the causes of disease in the temperate latitudes. Its influence in the production of disease is much enhanced when conjoined with moisture, for a very dry and cold air is far less capable of abstracting the animal heat and electricity than low temperature united with humidity. But the most important condition which renders the impressions of low temperature prejudicial to the animal organism relates to the state of the blood. The morbific influence of cold is always efficient in proportion to the abnormal condition of the blood, especially when this condition is induced by high temperature. The most powerful of all the predisposing conditions of the human organism to the injurious effects of cold is a state of free perspiration from fatiguing or exhausting labour, or exercise, under the influence of high solar heat.

Heat.—High atmospheric temperature acts much more frequently as a predisposing cause than an exciting. The mode in which solar heat contributes to the production of disease is manifold. The heated atmosphere is rarefied, and offers less resistance to the introduction of blood from the arterial extremities into the external capillaries, and affords less oxygen to the lungs at each inspiration. Between the glands of the skin and the liver there is an intimate relation of function, in consequence of which whatever excites the functions of the former generally produces an equal increase of the functions of the latter. This complementary relation of function always exists between these organs, when the lungs fail to perform the normal functions of respiration. Hence high atmospheric heat very generally produces an increased secretion of bile, by its influence upon the liver through the medium of the skin, whose functions it is so peculiarly adapted to augment. It is manifest that an inordinate activity of these two functions from the influence of heat must render them extremely liable to inactivity from the sudden effects of cold; and it is equally obvious that a sudden inactivity of these two important emunctóries cannot occur without an immediate injurious effect upon the whole organism. (*Johnson on Climate.*) As atmospheric resistance to the introduction of blood into the external capillaries is increased or diminished, according to the vicissitudes of temperature, it follows that when the temperature is high there is an augmented quantity of blood introduced into the external capillaries, by the increased force of the organic changes between the elements of the blood.

All the organic functions of these vessels are augmented and accelerated. An increased quantity of blood, which is normal in quality, is circulating in them. They are full, sometimes distended, and often present a reddened aspect. Cellular mutations are accelerated. The blood is introduced from the arterial extremities abounding in nutritive elements. These nutritive elements are appropriated with more rapidity and facility to the different tissues, which are identical with them in ultimate elementary arrangement and composition; while the effete elements are removed from the blood by a secretory process with equally increased rapidity.

The skin is bathed in perspiration. The augmented animal heat generated by the combustion of an increased quantity of oxygen and carbonic acid is transmuted into mechanical force, by which the aqueous elements of the perspiration are removed from the surface in the form of vapour.

The transmutation of animal heat into mechanical force is always sufficient to maintain the skin at a normal temperature, where the blood is in a normal condition. The increased animal electricity which is negative is attracted and transmuted into mechanical force by the positive electricity of the vapour of the perspiration, and repelled from the skin with the vapour. The sensitive nervous branches distributed to the external surface partake of the increased nutriment supplied to all the tissues by the augmented activity of the automatic functions. The automatic nervous force is communicated to the elementary constituents of the blood in the blood-cells of all the tissues in the form of nutritive attraction and effete repulsion; the sensitive and excito-motory nervous elements are therefore elaborated and appropriated to the coalesced tissues of these structures in an equally increased quantity.

These nervous structures are endowed with augmented force. The sensitive functions are performed more acutely, and the excito-motory more vigorously. An impression which would excite a sensation or motion in these tissues in this condition would not be recognized by them in an ordinary normal state. Hence they are much more influenced by any disturbing cause. This increased susceptibility of these nervous tissues to the force of a disturbing cause is often manifested in individuals in a high temperature by facilitating the production of sudden and dangerous local congestions or determinations of the blood.

When the atmosphere is rarefied, a less quantity of oxygen is absorbed by the lungs at each inspiration. The blood cannot, therefore, long continue to be normally oxygenated. It will soon contain an excess of the carbonaceous elements, unless their production be retarded; because they cannot be consumed by combination with the oxygen of the atmosphere, and manifested in the form of the different automatic nervous forces. The affinity of the different elements of the blood for each other is diminished by the diminution of the absorption of a normal quantity of oxygen at each inspiration. The force of all the organic processes is, therefore, retarded; because it is maintained by the normal cellular mutations between the elementary constituents of the blood, and whatever retards these changes diminishes this force. There is less desire to take nourishment; and if it is received into the stomach, it would not undergo chymification with normal facility and rapidity; and, therefore, it would cause a sensation of pain or fulness, more or less acute. Chylification and absorption are, in like proportion, decreased.

The nutritive elements in the absorbent system are not elaborated with the same energy; so that there is a less quantity of nutritive element received into the blood. The mechanical force of the action of the heart and arteries is diminished, because this force is maintained by the cellular mutations of the nutritive elements of the blood, at the termination of the muscular fibrillæ of the tissues, of which they are in part composed.

The increased activity of the external capillaries and diminished supply of the nutritive elements of the blood, by the decreased action of digestive processes, increase the deficiency of the nutritive constituents, while the *effete* elements are augmented by the excess of carbon retained in the blood. The elements of the blood begin to aggregate by chemical affinity in the capillaries, and an *appreciable* disease is manifested.

Vicissitudes of Temperature.—The sudden changes from a high temperature to a low, or from a low temperature to a high, especially when conjoined with all the sources from which febrile disease is most abundantly derived, are injurious in proportion to the state of the organism, the rapidity of the transition, and degree of the change. A very gradual change of atmospheric temperature seldom produces an *appreciable* disease, unless the blood is in an abnormal condition.

The mode in which high and low temperatures produce disease has already been explained.

It remains to explain the effects of the atmospheric vicissitudes upon the human organism, when they transpire with rapidity. When the cutaneous surface is in a state of free perspiration, under the influence of high solar heat, or from fatiguing and exhausting exercise or labour, the sudden application of cold to a large extent of surface, or to the stomach in the form of ice or cold water, will often suddenly produce the most alarming effects of extreme prostration, or an entire supension of the organic functions.

The affinity of warm moist air for animal heat and electricity is much more intense than that for cool moist air. Hence, it is a much more powerful disturbing force. This is amply evinced by the deleterious effect of the atmospheric vicissitudes, when the air is loaded with *warm, moist vapour*, impregnated by pernicious gases evolved by vegetable and animal decomposition.

Both ancient and modern writers maintain that it is necessary to associate *moisture* with heat to generate *malaria* by the decomposition of vegetable matter. The ancients personified malaria under the emblem of a many-headed monster, whose devastating influence was so severely exercised over the luxuriant fields of Argolis, that it was made one of the labours of the potent son of Alcmena to rid the country of this dreaded source of pestilence. Hercules, therefore, drained the extensive Lernian marshes. The ancients were firmly impressed with the mysterious agency of all diseases; and hence they attributed the causes of *fever* to the mysterious agency of *bad air*, produced by vegetable decomposition in a moist atmosphere in high latitudes. This has ever continued to be the prevalent theory. Upon what is it supported?

The chemical and physical properties of malaria are unknown to us; the experiments which have been made to discover its existence have not been successful. The air collected above the marshes of Fort Fuentes was found by Gattoni as pure as that at the summit of Mount Legnone.

M. Desaye obtained, in the most confined marshes, as on the most exposed hills, 78 parts of azote, 21 parts of oxygen, and 1 of carbonic acid, from an analysis of the air. Carburetted hydrogen has been regarded as the poisonous element in marshes. (Thenard, Dupuytren.) The same causative effects have been attributed to sulphuretted hydrogen. (Daniel; *Braithwaite*, part xliv. art. 112. Gardner; *Braithwaite*, part viii. page 1.) Carbonic acid has been regarded as the cause, from its abundance in the blood and secretions. (Ficklin; *Transylvania Journ.*, vol. ii. art. 9.) M. Julia considers it a fermentative element deposited by the dews.

Malaria has been attributed to a great multiplicity of poisons. The strongest fact in favour of this position is the occasional prevalence of the continued febrile paroxysm, attended by the ejection of a peculiarly black matter and yellow aspect of the external surface; for example, in the same situation for months, almost entirely to the exclusion of the intermittent.

But as this occurs only under high temperatures, in which the dew-point is low, or, in other words, in which the atmosphere is loaded with moisture, I do not think it furnishes conclusive evidence that the cause is specifically different from that which produces the intermittent. On the contrary, it brilliantly illustrates the *unity* of the febrile cause; for, the disturbing force of the atmospheric vicissitudes is very intense, while the automatic nervous resistance of the organism is very feeble, from the augmented quantity and altered quality of the blood in the thoracic and abdominal viscera, produced by the frequent recurrence of a feebler force of these vicissitudes.

The vast majority of writers, both ancient and modern, have not assigned any definite element as the active agent of malaria. They all, however, seem to concur in attributing the production of malaria to the decomposition of vegetable and animal matter in a moist, warm atmosphere. (Blane, Lempriere, De Lisle, Bancroft, O'Halloran, Fellows, Johnson, Macculloch, Rush, Eberle, Cooke, Jackson, Fenner, and many others.)

All the facts, and many of the arguments adduced by these authors, in support of the malarious origin of fever, contribute, in the most conclusive manner, to illustrate the deleterious influence of the disturbing force of atmospheric vicissitudes in a warm, moist atmosphere.

In latitudes where the atmospheric temperature seldom rises above 60°, fever occurs but very rarely, and, perhaps, never in an epidemic form. The Lithuanian marshes of Russia do not render the surrounding districts insalubrious.

From a series of observations made by many authors, it appears that the atmospheric vicissitudes are not sufficient to develop fever when the temperature does not rise above 80°. The atmosphere must be both warm and moist. It is not, however, necessary that *moisture* should be present in great *abundance,* for the causation of fever. Hence, copious and continued rains, by inundating marshy soils, render such localities comparatively salubrious. (Rush, Cook, Daniell, Fergusson.) From his observations on this point, Fergusson was induced to think that the production of fever was wholly independent of the decomposition of vegetable and animal matter, and apparently without the agency of humidity.

In support of his position he says: "In the months of June and July, our army marched through the singularly dry, rocky, and elevated country on the confines of Portugal, the weather having been previously so hot for several weeks as to dry up the mountain streams. In some of the hilly ravines that had lately been watercourses, several regiments took up their bivouac, for the *sake of being near the stagnant pools* of water that were left among the rocks. Many men were seized with intermitting fever." (*Fergusson on the Nature of Marsh Poison;* Trans. Roy. Soc. Ed. 1821.) "Half dried ravines and stagnant pools of water" are surely no evidence of a want of atmospheric humidity, and when the surrounding atmosphere is hot and dry, constitute an atmospheric condition the most favourable to the production of the most pernicious vicissitudes.

Water is a bad conductor; the heat of the sun is only imperfectly absorbed, and transmuted by the resistance offered to its absorption into mechanical force, by which the water in the form of vapour is conveyed into the atmosphere. As evening approaches, the atmosphere becomes more dense, until the vapour, in the evening and night, is deposited in the form of dew. The damp atmosphere is a conductor of heat and electricity, by which the animal heat and electricity is absorbed much faster than it is generated. The person exposed feels a sensation of chilliness. (*Willis on Fever;* Braithwaite, art. i. part 10.)

That a considerable degree of humidity is especially favourable and essential, is evident from the circumstance that marshes, stagnant pools, and the oozy shores of rivers and ravines have, in all ages and in all countries, been found the most insalubrious portions of the earth during the hot seasons.

The reason of this is obvious. Muddy water, or water which is impregnated with foreign elements, is a much better conductor of heat. Hence, the water in turbid and sluggish streams and stagnant pools absorbs more heat than pure water, before its resistance to absorption of heat transmutes the heat into mechanical force, by which it is conveyed into the atmosphere in the form of vapor.

The prevalence of fever in the vicinity of turbid and sluggish watercourses and stagnant pools, has long been observed and well authenticated. Soil has a considerable influence in the production of fever. (Rush.) A blue clay soil or an argillaceous one is the most favourable because it absorbs the heat of the sun, and in consequence retains its moisture, and thereby contributes to render the air in the vicinity moist. Let a person pass through a sandy soil over one of blue clay during a hot day, and he will feel sensibly the change.

The mixture of *fresh* and *salt* water in marshes, enhances the force of the atmospheric vicissitude. It is a singular fact, that the water of the sea is much more liable to go into putrefactive decomposition than fresh water. (*Eberle's Practice*, vol. i.) This, no doubt, depends on the great quantity of organic matter which it contains, and its consequent increased affinity for oxygen. The extensive pool of Valdec, in the south of France, and the large marshy plain in the vicinity of Lukes, on the south of the Ligurian Apennines, may be cited as examples.

Those who advocate the existence of malaria maintain that it possesses a specific gravity greater than that of the atmosphere. (Rush, Caldwell, Cook, Eberle, Blane, Bancroft, De Lisle, Macculloch, and many others.) Hence they say, that persons sleeping in elevated chambers are much less apt to contract miasmal diseases, than such as are lodged on the ground-floor. The ancient Romans appear to have been impressed with this idea, and they availed themselves of it by almost uniformly selecting very elevated positions or hills for the sites of their cities.

Many elevated localities, however, have been observed to be much more insalubrious than the low lands surrounding them. Morne-fortune, at St. Lucie, the Hospital and Richmond Hills at Grenada (Bancroft), Monjui, a hill 700 feet high, overlooking Barcelona (O'Halloran), may be cited as examples of this. Dr. Blane and others relate similar facts.

The atmosphere immediately above the surface of the earth is warmer and much moister than that more elevated, and, therefore, has a greater specific gravity. Hence, the nearer the surface of the earth, the more intense will be the disturbing force of the atmospheric vicissitudes.

The insalubrity of some elevated localities may be explained by reference to their geological formation and vegetable growth, by which the atmosphere which has received its moisture from low lands surrounding them, are made warmer and moister, and of a greater specific gravity, than that over the low lands. Hence, from these causes, the atmospheric vicissitudes are, on these hills, more intense and pernicious. Writers upon malaria have observed its effect to be more deleterious during the first hours after the setting of the sun, and immediately before its rising. (Rush, Cook, Bancroft, Fellows, Johnson, and others.) These observations admit of an easy and philosophic explanation.

The atmospheric viscissitudes at these periods are the greatest, and the resistance of the organism to their disturbing force, the weakest.

The heat of the sun rarefies the atmosphere, and thereby diminishes the force of its presence; and in consequence of this, an augmented quantity of blood is introduced into the external capillaries, and all the organic functions in these vessels are performed with increased activity. There is a less quantity of oxygen absorbed, and food used, during the day. The resistance of the organism to the disturbing force of warm moist air, therefore, is diminished.

It is a well observed physiological fact, that the functions of the cutaneous capillaries are augmented during sleep; and it is an equally well established physiological fact, that the degree of resistance to the force of disturbing causes and that of the activity of the functions of the organism, depend on the quality and quantity of nutriment received and normally assimilated. Hence, long abstinence from food, or even being without it during the night, especially when the organic functions of the cutaneous capillaries are endowed with increased activity, as in sleeping, weakens the automatic nervous force and diminishes its power of resistance to the disturbing force of the atmospheric vicissitudes usually observed in high latitudes early in the morning. The pernicious effects of these vicissitudes in the evening and morning, have been often observed in this climate during the summer and early autumnal months.

Many authors maintain that the passage of malaria, like that of warm moist air, may be prevented by mechanical obstruction. Thus, the interposition of a dense forest, of a high wall, a chain of elevated hills, or any other mechanical obstacle, has been known to protect the inhabitants of villages, of camps, of convents, and of single habitations from the pestiferous influence of neighbouring marshes. The pernicious gases are always more or less entangled and retained mechanically in the moist air, and often transformed into compounds less pernicious where the motion of the atmosphere is arrested or impeded. De Lisle relates several very remarkable facts illustrative of this observation. (Bancroft, Monfalcon.)

A convent situated on Mount Argental, near the village of St. Stephano, was, for a long time, remarkable for its salubrity until the trees by which it was surrounded were cut down, when it became extremely sickly.

From mechanical resistance to the dissemination of warm moist air, contaminated by pernicious gases evolved by vegetable animal decomposition, many confined localities have been observed to be peculiarly insalubrious. Marshes surrounded by dense forests, in warm climates, have given unequivocal illustrations of this fact. The same effect has been observed in most low, marshy districts in high latitudes, or in hot seasons, in this climate, when environed by high hills or a dense forest. From these causes, some of the valleys in the mountainous regions of South America, are remarkably insalubrious, while the surrounding elevated localities are extremely salubrious. This is the condition of Acapulco, which, as Dr. Macculloch says, may be regarded as a striking instance "of the imprisonment of malaria by hills." This explains the wonderful intensity of the disturbing force of the atmospheric vicissitudes in jungles and swamps environed by dense forests.

A diversity of opinion has prevailed as to the distance to which warm moist air may be diffused from its source of emanation. In a quiescent state of the atmosphere, the sphere of the disturbing force of the vicissitudes is much more limited than has generally been supposed, because the atmosphere is not a conductor, and, therefore, offers mechanical resistance to the dissemination of vapour. The continued force of this resistance overcomes the mechanical force of the transmuted heat of the sun, by which a portion of the water is driven into the atmosphere in the form of aqueous vapour; because, the mechanical force derived from the transmuted heat of the sun diminishes in intensity in a direct ratio of equivalence of distance from its source of emanation. The force of atmospheric currents often conveys warm moist air, largely impregnated by noxious gases evolved by vegetable decomposition, several miles in a state of copiousness and concentration, fully adequate to the production of a disturbance of all the organic functions, and a fever or a diseased transformation of the tissues.

"In Italy," says Dr. Macculloch, "the poisonous exhalations of the Aguano reach as far as the Convent of Camaldoli, situated on a high hill at the distance of three miles. The account of thirty Roman noblemen, mentioned by Lancisi, is an interesting illustration. They were sailing near the mouth of the Tiber. Twenty-nine out of the thirty were soon seized with the intermittent form of fever."

The effects, often truly frightful, of the *harmattan*, after becoming loaded with the pernicious gases of the swamps of Benin, afford a strong elucidation of this fact. Those who reside on the north or east side of marshes, stagnant pools, or sluggish streams in this climate, often suffer much more from the vicissitudes of warm moist air, contaminated with gases evolved by vegetable decomposition, than those who live on the south or west margin; because, the atmospheric currents, during the hot season, generally prevail from the south to the north, or from the west to the east. Late in the fall, when the currents of air usually reverse their course, the southern or western margins are more insalubrious. The cause of this difference manifestly consists in the course of the wind. Violent storms, and copious showers of rain, tend powerfully to produce an equilibrium in the different forms of the external force. Nothing is more common, therefore, than to observe febrile, diarrhœa, and dysenteric epidemics to remit immediately after copious floods of rain, or violent storms. (Rush, Eberle, Bancroft, and others.) Those who believe in the existence of malaria, maintain that there is a variety (*Idio-miasmata*) generated by the decomposition of the matter of perspiration and the other secretions of the body. It is chiefly during the cold season of winter that it is generated. Its effects are always strictly limited to the confined and crowded hovels of the poor, crowded jails, ships, hospitals, and wherever many individuals are confined in apartments not duly ventilated. In order to save fuel, and to compensate for deficient clothing, the external air is carefully excluded. The unhealthy condition of these habitations admits of physiological explanation without the supposition that this mysterious monster, *miasmata*, is here generated and present. The food the inmates use is impure in quality and deficient in quantity, and the air they breathe is deficient of oxygen and contaminated by an excess of carbonic acid by being often breathed by the same or different persons without any admixture of the external atmosphere. Want of cleanliness and appropriate exercise in the open air, decreases and perverts the organic functions of the external capillaries. The cutaneous glands do not depurate the blood of the appropriate effete elements. (Snow; *Braithwaite*, part xiii. p. 146.)

The abnormal secretion of the skin, and often other abnormal secretions which are not deposited in an appropriate receptacle, produce an evolution of pernicious gases, as the sulphuretted hydrogen, which tends powerfully to disturb the perfect equilibrium which should be maintained between the different forms of the automatic nervous force, and thereby produce a diseased transformation of the blood. The blood is not normally transformed, the automatic nervous force is enfeebled, and the effete elements, when not depurated, gradually transmute it into chemical action or force between the elementary constituents of the blood. All the organic functions now suffer. The cellular mutations of the elements of the blood are abnormal.

The different forms of the automatic nervous force becomes more and more enfeebled, and more and more transmuted into chemical actions. The excess of motion or force thus abnormally generated is but feebly conveyed to the motor apparatus of the organism, by which it might be consumed. The continued generation of this excess of morbid motion by the transmuted automatic nervous force, and its equally continued conveyance to the motor apparatus, produced a continued febrile paroxysm, until the automatic nervous force is consumed, or transmuted into chemical action between the elements of the blood and transformed tissues.

Many authors have called the form of febrile paroxysm, thus produced, *typhoid* or *typhus,* according to the presence or absence of particular local lesions of nutrition. From the simple fact that persons similarly situated are liable to suffer of the same disease, this form of febrile paroxysm has been supposed by many authors to be generated by contagion. There is no more evidence, however, of its propagation by contagion, than that of intermittent febrile paroxysm.

The form of febrile paroxysm varies in accordance with the degree of intensity of the disturbing force of the atmospheric vicissitude and the degree of resistance offered to this disturbing force by the automatic nervous force. Hence, we observe the intermittent and continued febrile paroxysms.

The deleterious power of atmospheric vicissitudes is manifested not only by violent and fatal forms of febrile paroxysms, which they are known to produce so abundantly, but also by the more slow inroads they make on the physical and moral condition of those unfortunate individuals who are habitually exposed to their influence. The indigenous inhabitants of marshy districts in warm climates present an aspect of suffering and wretchedness from this cause which is well calculated to excite the commisseration of those who are more fortunately located. Continually exposed to the deleterious influences of the vicissitudes of warm and moist air loaded with pernicious gases, man in such situations exhibits a state of feebleness and early decrepitude strongly indicative of a broken-down constitution and deep irremedial chronic disease. So deep and pervading are these climatic effects on the human organism, that it never fails to debase in a remarkable degree both the physical and moral constitution of a people who, through successive generations, reside in localities of this character. Not only does the stature and symmetry of the body suffer conspicuous deterioration, but the mind becomes torpid, feeble, pusillanimous, and the moral sentiments debased. Intemperance, the greatest social curse and most debasing moral blight, is also much more prevalent in these localities.

But, while such chronic and constitutional effects are wrought by the habitual endurance of these vicissitudes, the organism loses its susceptibility of being excited into those violent commotions of febrile action which they are so liable to produce in individuals less accustomed to their impressions. The natives of marshy districts are comparatively much more rarely affected with the continued febrile paroxysms than those who are only occasionally brought within the sphere of these climatic vicissitudes; because in the former the disturbing agency of these vicissitudes is resisted by the inured automatic nervous force, while in the latter, who are not accustomed to its influence, its effects burst out in a raging and rapidly consuming flame.

There is no doubt that the disturbing force of atmospheric vicissitudes varies in the degree of intensity according to the various circumstances of locality, and the relative proportions of pernicious gases evolved by vegetable and animal decomposition. The febrile paroxysm of Batavia differs from that of Walcheren, that of Antigua from that of the Ganges, and all these differ from the plague of the Levant. (Dr. James Johnson.) That certain countries and localities have an especial tendency to generate one form of febrile paroxysm, while in other localities the other form almost exclusively prevails, is an observation founded on abundant testimony of unquestionable authority. In Germany, the intermittent febrile paroxysm assumes the tertian type; in Italy, the quotidian type greatly predominates; and in Hungary, fever is peculiarly liable to be attended with petechia. The febrile paroxysms of the Pontine marshes are noted for the brevity of their intermissions, while in Holland they are equally noted for their protracted duration. In Spain, Africa, West Indies, and the southern parts of the United States, the febrile paroxysm is continuous, remarkably intense, and almost uniformly attended by the ejection from the stomach of a peculiarly black matter and yellow aspect of the external surfaces. In the Western States, the paroxysm is generally intermittent, but sometimes continuous.

As the morbid effects of the disturbing force of the vicissitudes of warm moist air produced on the functions of the organism depends on the resistance offered to its deleterious force by the automatic nervous force, so of a number of persons exposed for a certain time to this atmospheric vicissitude. Some may be affected with the intermittent, others with the continued: others may escape entirely.

The local manifestations of the diseased condition of the blood produced by the vicissitudes of warm moist air is by no means limited. The most simple form of general disease induced by this state of the blood is the intermittent febrile paroxysm as it usually prevails in the Western States. As the intensity of the disturbing force increases in power the automatic nervous force generally diminishes in resistance, and the febrile paroxysm increases in duration and malignancy. Then the febrile paroxysm almost always exhibits *appreciable* local manifestations of the general diseased condition of the tissues in the form of an inflammation or congestion. The diseased condition of the blood is often manifested in the form of dysentery, diarrhœa, pneumonia, hepatitis, neuralgia, &c.

The reason that many low, wet districts usually remain healthy in this climate is that the water remains nearly pure, and, being a very imperfect conductor of heat, absorbs only a small quantity. This heat is, of course, chiefly transmuted into mechanical force and driven into the atmosphere, carrying a portion of the water in the form of vapour. The vapour soon becomes so attenuated by the force of atmospheric resistance that it makes but a feeble impression on the organism.

The water of alluvian pools, bayous, sluggish streams, and their oozy alluvian shores is made impure by vegetable decomposition and mechanical retention of foreign elements. The affinity of the water of these localities for the heat of the sun is commensurate with its impurities; but the quantity of heat absorbed is more than equal to that transmuted into the mechanical force, by which a portion of the water is driven into the atmosphere in the form of vapour; because a portion of the absorbed heat is retained in the water, by which its temperature is made higher than that of pure water in the same locality. Another portion of the absorbed heat is transmuted into chemical affinity, by which impure water has a greater attraction for the oxygen of the atmosphere than pure water. Hence vegetable matter undergoes decomposition with much greater rapidity in impure water, and the gases of which the water and vegetable matter are composed are much more abundantly liberated. Some of these gases, which have no affinity for each other when completely evolved in the nascent state, readily combine and form new compounds.

This explains the formation of sulphuretted and carburetted hydrogen so abundantly evolved by vegetable and animal decomposition in a warm moist air, or in water impure from these decompositions. The pernicious effects of the respiration of these gases upon the human organism has been minutely described and well authenticated. (Daniell; *Braithwaite,* part iv., art. 112; Dr. Gardner; *Amer. Journ. Med.,* April, 1845; and others.) The production of fever has been ascribed to the presence of these gases by some of the same authors, but without sufficient evidence. They contribute to the formation of fever by disturbing the normal state of the automatic forces. This is the mode in which all gases evolved by vegetable and animal decomposition influence the human organism. They diminish the automatic nervous resistance to the disturbing force of atmospheric vicissitudes.

When the absorption of the animal heat from the cutaneous glands by moist air takes place with great rapidity, or when it is often repeated, all the organic functions performed in these glands must be decreased or perverted, according to duration or rapidity of the absorption, and the condition of the blood. For the force of nutritive attraction and effete repulsion between the elements of the blood is maintained by the automatic nervous force, which controls and regulates the organic functions and maintain a perfect equilibrium between it and the chemical action between these elements. Chemical action is always increased by transmutation of this force, by the force of a disturbing cause, when its intensity is not adequate to the resistance of the disturbing force, and this action which is maintained by transmuted automatic nervous force, and which takes place between the elements of the blood and the oxygen of the atmosphere in the capillaries, perverts the transformation of the blood-cells, when it predominates over the automatic nervous force. The secretory processes by which the blood is freed of its effete elements, and the nutritive process by which the different tissues are maintained and repaired, are decreased or perverted, because the cells containing neither the effete elements nor the nutritive are normally transformed.

If, then, by cold produced, the absorption of animal heat by moist air, an elementary constituent, or constituents, be increased, decreased, or perverted by a lesion or diminution of the automatic nervous endowment, they will continue to maintain a morbid relation to the normal elements of the blood as long as the chemical action between the elements predominate over the automatic nervous force. Controlled by the laws of chemistry, they will aggregate in obedience to these laws; and, as superior quantity is equal to increased affinity, they will continue to augment by affinity.

This is abundantly manifested by the progress of any disease. In the forming stage of an inflammation there is only a slight increase of the protein compounds, and protein excess, by the superior affinity of an increased quantity, in accordance with chemical laws, continues to augment, and soon constitutes the prominent character of diseased action.

In the incipient state of fever, there is only a minute excess of carbonaceous compounds retained in the blood by a suspension of the secretory process by which they are eliminated. The retained carbon produces chemical action between the elements of the blood, and thereby makes less intense the force of the nutritive attraction and effete repulsion between them. It disturbs that perfect equilibrium which should be maintained between the organic nervous force and the chemical action, and, in consequence of this disturbance, many of the cells containing elementary constituents of the blood are not normally transformed. A greater or less lesion of the organic function must supervene. The lesion of the capillary circulation will be commensurate with the duration or intensity of the disturbing force upon the automatic nervous force. The carbon in the blood-cells which are not normally transformed, will not combine with the oxygen of the atmosphere, or contribute to the formation of elementary compounds, or evolve heat and be removed from the blood in the form of carbonic acid by a secretory process. A limited quantity only of carbon combines by cellular mutation with an equivalent of oxygen; hence, only a portion of the carbon of the blood is consumed by combination with oxygen, while another portion is transmuted into chemical force.

The lesion of the capillary circulation will be commensurate with the duration or intensity of the disturbing cause. The action of the heart and arteries will become more and more enfeebled by the augmented quantity and altered quality of the blood retained in them by capillary lesion. For, although the muscular contractions of the heart and arteries may be increased in rapidity, yet they are diminished in intensity; because the force of these contractions, which is derived from cellular mutations at the ultimate terminations of the fibrillæ of which their muscular tissue is composed, is decreased or perverted according to the quality and quantity of the blood circulating in their capillaries. Any disturbing force will, therefore, produce a diminution of the muscular force of the action of the arteries and heart, where it is of sufficient intensity to retard the cellular mutations in cardiac or arterial capillaries either by direct lesion of their automatic nervous force or by indirect lesion of this force through the medium of the altered quality of the blood, in which the chemical action predominates.

Enfeebled action of the heart and arteries *always* precedes a febrile paroxysm, and is always present during that period. A *febrile paroxysm* is produced when the automatic nervous force communicates the excess of the chemical action or force to the sensitive and excito-motory nervous systems. As the phenomena of motion in the animal organism are dependent on the change of matter, so the increase of the change of matter in any organ or tissue is followed by an increase of all the motions. When a great excess of force is produced by a change of matter, the force, since it can only be consumed by motion, is extended by the organic nervous force to the apparatus of the sensitive and excito-motory systems. (*Liebig's Animal Chemistry*, p. 75.) This is an explanation of the aspect and condition of the organism usually present during a febrile paroxysm. An accelerated state of the circulation in a febrile paroxysm must always be preceded by an increased cellular mutation of the elements of the blood in the capillaries, because these are the agents which the automatic nervous force employs to control, maintain, increase, or diminish the force of the circulation.

A resumption of the organic functions in the external capillaries must always precede an increased force of the circulation. This is manifested by an increased heat of the skin, a suffusion of the surface, often a throbbing of the external arteries, and always an incipient perspiration. Then an increased quantity of blood and of oxygen is conveyed into the capillaries. Copious perspiration follows; an increased secretion of urine and of bile ensues; and respiration is free and more tranquil. The oxygen absorbed from the atmosphere is conveyed to the whole organism, combines with the excess of carbon in the blood, and evolves heat, while the azotized elements of the transformed tissues are left free to combine with hydrogen, and be removed by secretory processes.

When the organic functions in the capillaries are performed with abnormal rapidity, an increased quantity of arterial blood, rich in nutritive elements, is introduced from the arterial extremities into the capillaries by the increased affinity of superior quantity. The accelerated force of the augmented quantity of the blood, and the increased rapidity of the muscular action of the heart and arteries promotes the combination of the oxygen of the atmosphere with the retained carbon in the blood; and if lesion of capillary circulation is not produced by the excess of chemical action between the elements of the blood in any organ, the increased combination and combustion of the abnormal excess of carbon will continue uniform until it is neutralized and removed from the blood by secretion, by which the blood will be depurated of effete elements, and left in a normal condition. But when lesion of the capillary circulation is produced by excess of chemical action in any organ, the elements of the blood in the capillaries in that organ will aggregate by chemical laws, and the oxygen of the atmosphere will not only combine with the aggregated elements of the blood in the diseased capillaries, but also combine with the elements of the adjacent tissues, for which it has an affinity, because their automatic nervous force has not sufficient intensity to produce the cellular mutations by which the oxygen could combine and consume the retained carbon in obedience to the laws of the organism. The force of the oxygen which does not combine with the excess of carbon in the aggregated elements is spent upon the adjacent tissues; diseased action augments; a lesion of solid tissue is produced. This lesion will be commensurate with the abnormal condition of the aggregated elements and the degree of resistance offered to the diseased action by the automatic nervous force.

ART. VIII.—*Diffuse Aneurism of the Femoral Artery, following a wound; Ligature of the External Iliac Artery, &c.; Recovery.* By A. H. AGARD, M. D., of Western Starr, Summit County, Ohio.

A. P. M. aged 27, a muscular, hardy man, of a sanguine-bilious temperament, received a stab in the upper and front part of the thigh, on the night of December 7, 1854, with the blade of a small dirk-knife. Profuse hemorrhage followed, from which he fainted in a few minutes. The blood was said to have been dark coloured, and to have flowed without any arterial jet. He was not seen by a physician, however, until after syncope had taken place. The amount of blood lost was reported by the bystanders to have been quite large. Vomiting and recurring syncope followed for a few hours, when reaction came on, and he was thought to be comfortable and doing well.

The wound, which was found near the inner border of the sartorius muscle, about one and a half inches above the point where the border of the muscle passes over the femoral artery, consequently a little to the outer side of the artery, was dressed by a compress and roller by Dr. Chapman. No hemorrhage followed. The surface wound healed in two or three days, and the patient so far recruited that he was taken home, a distance of three miles. Meantime a large, painful tumour appeared in the region of the injury, which gave the friends some anxiety, and Dr. McNeil, the family physician, was called in December 11, four days after the receipt of the injury. What the precise condition of the patient was on the 11th, I do not know. He was thought to be "doing well," and not considered in danger of serious trouble, as the friends afterward told me.

Being in the neighbourhood on the 12th, I was urged to call and see him, as he had passed a bad night, and was thought by his friends to be worse. I did so, more as a friend than a physician; but since we are without any continuous history of the case up to this point, and as I afterward had somewhat to do with the case, I will here give briefly the symptoms as they were observed at this period.

I found a large, firm tumour on the upper and inner part of the thigh, extending from one and a half inches below Poupart's ligament, more than half way to the knee, and increasing the part to nearly twice its normal size. It was somewhat tender under pressure; the surface a little red and mottled, and the temperature slightly increased. The borders of the mass seemed quite firm; the centre was elastic, and had strong and distinct pulsations. I was told that he had been in great distress during the night; had suffered from much pain in the whole limb, and from a throbbing sensation in the tumour. He had repeatedly declared that it "was bleeding again, for he could feel the blood run," &c. The pulse was 110, quick and small; surface was hot and dry; bowels were somewhat distended, and a little tender; had not been open for three days; sleep much disturbed; had subsultus; was a little wild on waking; had thirst and loss of appetite. A laxative was advised, and the friends were desired to send for their physician, as the case was one of importance, and needed immediate and constant attention. Dr. McNeil gave the case his attention, and did whatever seemed advisable until the 16*th*, when Dr. Chapman was called in consultation, with a view to determine more clearly the nature of the case by obtaining from him the early symptoms, such as the nature of the flow of the blood, its colour, &c.

On the 19*th*, the patient suffered a slight hemorrhage from an opening which had been made into the tumour a day or two previously. From this date, hemorrhages were repeated from time to time as often as his pulse gained any force, until the patient was brought into great danger.

On the 22*d*, Professor Ackley, of the Cleveland Medical College, was desired to see the patient, but his professional duties were such that he could not do so; and Dr. Garlick, his partner, came in his stead. By request of the friends and their physician, I was present at the consultation. The condition of the patient at this time was, in all respects, unpleasant and unpromising in the extreme. Exhausted by the repeated bleedings, and by the protracted constitutional irritation necessarily resulting from the condition of the thigh, he had become very much reduced, and was almost in hopeless collapse. His pulse was 120, small, and feeble; lips pale; surface was sallow and clammy, often bedewed with profuse perspiration; countenance cadaverous; eyes were sunken, and spirits dejected. He still suffered great pain, sometimes in the tumour only, sometimes about and just below the knee, and by paroxysms; the whole limb was extremely painful. The tumour was at this time somewhat larger than when I saw it before, eight days previously, and the pulsation observed so distinctly on the 12*th*, was no longer detected. Add to these symptoms a colliquative diarrhœa, and the case is seen in outline.

It was thought that any operation having for its object the cutting off of the circulation in the tumour by ligature would be, at this time, entirely inadmissible—certainly so, if by any means we could hold on to the patient for a few hours, control the bleedings, and so far husband his strength as to bring him up within reach of the operation which all agreed was the only one suited to the case—ligation of the external iliac.

Dr. Garlick proposed to apply a large, firm compress, and confine it snugly over the tumour by means of a roller, with a view to restrain the hemorrhages until the patient could be so far recruited as to have the external iliac ligated, or to have such other measures taken as his condition, in the progress of the case, might seem to demand. Dr. McNeil and myself were detailed to be in constant attendance alternately.

The patient was somewhat comfortable until, on the morning of the 26*th*, he was so far improved in his general symptoms that he seemed in a condition not unfavourable for an operation. The hemorrhage had been slight, only enough to stain the dressings, until about noon on the 26*th*, when there came a sudden gush, which wet them all through. I was with him at the time, and immediately arrested the flow by pressure on the artery above the tumour; but blood enough was lost by this momentary dash to reduce him again very much.

Dr. Garlick saw him again at 4 o'clock of the same day. Finding his general symptoms somewhat improved since his previous visit, he thought best to continue the treatment. Notwithstanding the loss of blood which he had suffered at noon, he still thought the bleeding might be controlled by compresses, and spoke hopefully of the patient's recovery. We again dressed the limb with a compress and roller of flannel, applied from just above the knee to the groin, drawn as tightly as the patient could bear.

Dec. 27. Passed a restless night; foot and leg much swollen and tender; the whole limb painful. No stain of blood on the dressings; pulse and strength not improved; was in no way better. Applied a roller from the toes, and continued treatment. Dr. Alexander Fisher, of Chicago, being an acquaintance of the family, had been solicited to visit the patient, and arrived in the evening.

28*th*. Was no better; tumour extending higher; no improvement in the general symptoms.

29*th*. Tumour still higher in the groin; all the symptoms rather worse; no bleeding apparent, but there was an evident loss of strength, and the circulation was being exhausted. Dr. Fisher was of the opinion that the external iliac would have to be ligated, or the patient would be lost, and he thought every hour's delay dangerous. It was agreed that for the day, pressure, as constant and firm as the patient could tolerate, should be kept up by the fingers of assistants, on the artery above the tumour, with a view to determine the strength of the collateral circulation. Meantime Dr. Fisher advised the friends to telegraph to Drs. Ackley and Garlick that they were desired to visit the patient immediately. Professor Ackley dispatched back that they could not leave, and that he (Dr. F.) should operate, if necessary.

30*th.* Morning. Passed a restless night; dressings stained with blood; pulse feeble; spirits more hopeful; looks forward to an operation as his only hold on life. Pressure on the artery, which was kept up for twelve hours, did not very much diminish the temperature of the limb. The tumour was still pushing its way upward, and now jutted above Poupart's ligament. The surface of the limb looked sallow, and extremely unpromising. Indeed, the entire capillary circulation was so feeble that slight pressure upon any part of the surface, continued for a few moments, would produce severe pain. Hence, a peculiar intolerance of position, from which he suffered much. I think for fifteen days his position was changed as often as four times in an hour; never lying over thirty minutes, and often not ten, without being changed in some way.

As soon as the light was good, the patient was placed upon an operating table; and Dr. Fisher, assisted by Drs. Angel, Howard, and Peck, of Akron; Dr. Munson, of Richfield, and the attending physicians, proceeded to ligate the external iliac. The patient was first etherized by the use of sulph. ether, administered on a sponge. He improved under its influence; his pulse became more full and less frequent.

The operation performed was nearly the one recommended by Sir Astley Cooper; was neatly and expertly done, and was completed without any untoward event. It was judged that not half an ounce of blood was lost; the cellular connections of the vessel were but very little disturbed, and, so far as the operation was concerned, all looked favourable.

After the wound had been closed, the patient was placed in bed, and the limb enveloped in warm flannels. Its temperature was not much diminished until the lapse of about forty minutes after the operation, when it was with some difficulty kept warm. Artificial warmth was assiduously applied for eight hours, when the collateral circulation became so well established that less anxiety was felt for the limb; yet for several days the warm flannels were reapplied about the foot and leg as often as every thirty minutes, and for a longer time there was but little sensation on the surface, particularly about the knee. Anodynes and diffusible stimulus were given *pro re nata.*

31*st.* Passed a comparatively comfortable night. Complains of some pain in and about the tumour. Pulse 120, quick, and small; tongue coated as before. Refuses all kind of nourishment save a little raw egg, with brandy, which he relishes very well. Complains of slight tenderness in the region of the ligature.

Jan. 1. General symptoms about as on the day previous. Fluctuation detected in the tumour on the inner and lower part of the thigh. An opening was made, and a large quantity of reddish brown matter discharged—floating, broken coagula, very fetid.

2*d*, 3*d*, 4*th*. General symptoms very much as before; abscess discharges largely; tumour somewhat diminished in size by the discharge; incision in the groin all healed save around the ligature; no appetite; still takes his egg with brandy; strength not improving.

5*th*. Slight arterial hemorrhage from the old incision in the tumour, this morning; pulse feeble; feels dejected.

6*th*. Rather more comfortable; abscess discharging largely.

7*th*. Arterial hemorrhage appeared again to-day, and was so profuse as to give alarm. Dr. Fisher was present when the bleeding came on, and believing that it could not be controlled while the large mass of coagula filled up the cavity between the surface and the bleeding vessel; and finding that the patient would be soon exhausted of his little remnant of vitality if the drain was allowed to go on, he at once made a free incision through the tumour, and removed a coagulated mass which measured three pints, and immediately forced compresses into the bottom of the wound, and thus controlled the bleeding. He says the pale arterial blood welled up from the bottom of the wound profusely until he arrested the flow by the compresses.

8*th*. Is feeble to-day; no more bleeding; limb not painful; compresses allowed to remain, and did all we could to invigorate the patient.

9*th*. Feels better; pulse stronger; but is much depressed in mind by the return of the bleeding.

It was deemed unsafe to trust longer to the compresses to restrain the hemorrhage; and it was decided best to have recourse to the only means now within our reach to save the patient, *i. e.*, to attempt the ligation of the bleeding vessel, at its most healthy point in the bottom of the abscess. It was thought, since the force of the circulation had been cut off by the ligature of the iliac, that a ligature lightly thrown around the injured vessel might perhaps secure a closure of the artery, and thus complete the cure.

The patient was placed again upon the operating table, brandy and opium were given him, and Dr. Fisher, assisted by Dr. McNeil and myself, removed the compresses, examined the parts carefully, and placed a ligature around the profunda, a little below its origin. This failed to arrest entirely the oozing of arterial blood, and another ligature was thrown around the external circumflex, just before it gives off the ascending branch. Great caution had to be observed, in tightening the ligature, not to divide the softened vessel; and caution was necessary to avoid, so far as could be, all laceration of the living tissues, as the least scratch or abrasion was followed by an oozing of pale arterial blood. The last ligature seemed to control entirely the arterial hemorrhage. The tissues in the vicinity of the wound were so changed in appearance that it was impossible to determine exactly the location of the original puncture. It was, however, either in the profunda, just at the origin of the external circumflex, or in the latter vessel very near the profunda.

To secure these vessels was a much more tedious and difficult operation than the ligation of the iliac had been. One who has not attempted to search for delicate parts in a half-disorganized mass, can form no accurate idea of the perplexity and uncertainty attending the procedure. A very large quantity of pus and coagula were sponged from the cavity; the parts were brought together with adhesive strips, and the patient, very much exhausted, placed in bed.

10*th*, 11*th*. Feels feeble; pulse 120, quick and feeble; appetite still bad; takes no nourishment save his egg with brandy; seems listless and indifferent; matter from the wound fetid, quantity large, thicker than before, but still of a reddish-brown colour; bowels begin to be disturbed; stools frequent, thin, and ochrey in appearance, and have an odour resembling that from the matters discharged by the abscess; dejections preceded by severe griping pains in the bowels.

11*th* to 18*th*. Bowels gave great trouble. The diarrhœa became at times almost colliquative. The secretions were all unhealthy, and the excretions were loaded with offensive and irritating matters. It was with the greatest difficulty that the patient was kept from sinking into collapse. The stomach would tolerate no nourishment but the raw egg, and brandy was required at short intervals. The limb, however, continued to do very well—better far than we anticipated it could do under such unfavourable circumstances of constitution. The whole thigh was kept constantly enveloped in a cataplasm of yeast, thickened with the *Daucus Carota*, prepared by rasping the fresh root of the cultivated carrot. This local application was commenced soon after the ligation of the iliac, and the improvement in the capillary circulation of the part—as was evidenced by the better colour of the surface and the improvement in the character of the pus—was so striking under the circumstances, that I cannot but believe that there is virtue in the application; and hope it may be tried whenever cataplasms are required to fulfil similar indications. They were omitted, and a compress and roller substituted as soon as the abscess began to discharge freely.

19*th*. Bowels are better; stools dark green, tinged with yellow; thicker; contain some mucus and blood; has tenesmus with the dejections; patient is brightening up; pulse 110, more full and soft; abscess discharges but little; pus healthy; still lives on raw egg, which he relishes well; is decidedly better.

20*th*. Bowels are still better; abscess this morning ceased to discharge pus, and in its stead a little bloody serum flowed from the cavity, which is yet large, and the parietes over it are flabby.

This evening the discharge is a pure yellow serum; had a paroxysm of intermittent fever to-day; has been subject to attacks of it for some months past. Sulph. quinia given to arrest the paroxysms.

21*st* to 27*th.* Is improving every way; appetite returned; bears tonics well; ligature on the profunda came away to-day; complains of some tenderness around the one on the large vessel. After the change of the matter in the abscess on the 20*th*, the cavity closed down in three days, almost like the union of a fresh wound by first intention.

From this the patient recovered rapidly without one untoward symptom.

In review of the case, some things seem worthy of particular remark.

In the first place, the difficulty of early diagnosis in cases of this kind; the liability of their importance being overlooked by the practitioner who is not on the alert for these things, have long been subjects of remark. Aneurisms have been mistaken for abscesses, and have been treated as such, and *opened* even, by surgeons of distinction; and abscesses and various tumours have been treated as aneurisms. In this case, the report that the blood was venous; that it flowed without an arterial jet; the small size of the surface wound; its location—not in the track of any large artery—were all circumstances which had an unfavourable influence in the early diagnosis, which unhappily gave the case much of its subsequent importance.

We cannot always rely upon the statements of bystanders in matters of this kind. They are often not qualified to give information such as we require; and what they observe is often during a bustle and when excited, as in this case; and they often at the time attach but little importance to things about which we have occasion to question them afterward. We must sometimes dare to believe what we see, independent of what has gone before. If we find a pulsating tumour, following a wound, and having all the present evidences of its having connection with the interior of an artery, we must diagnose a traumatic aneurism; no matter what its antecedent characteristics may have been. A wound that has punctured an artery may also have laid open a vein, and thus the arterial blood will be darkened by the flow from the venous vessel—indeed, the blood may be mostly dark, and yet a dangerous aneurism follow. Again, many things might operate to cut off the jet from a bleeding artery; the wound might be deep and small; its course tortuous, &c.; and truly it is not necessary that the blood from a wounded artery should ever reach the surface in order to have a diffuse aneurism follow a puncture. And a wound may not necessarily be in the track of a large artery in order to have a traumatic aneurism follow, as this case clearly illustrates. It is well known that small arteries, when partially divided, often make the most difficult cases of this kind.

The magnitude of the trouble arising from an injury apparently so trivial, is also worthy of remark, and is another lesson teaching the importance of correct diagnosis. "Be sure you are right, and then go ahead," though a vulgar one, is nevertheless a valuable motto.

A robust young man gets a stab in the thigh from a small dirk-knife, and in consequence of an incorrect diagnosis at the first, is obliged to keep his bed for ten weeks, for most of the time unable to turn himself alone, suffers much pain, submits to three operations of no small magnitude, his life much of the time in great peril, and recovers at last only by an amount of care and attention on the part of his physicians and attendants which very few can obtain. It is difficult to give any just idea of the amount of care which was necessary to carry him through. He resided in the country, three miles from Dr. McNeil, and seven miles from my own place of residence; hence the reason of our constant attendance. From December 22 to January 20, he was scarcely an hour without a physician in the house; and three attendants were constantly required to turn him and change his position. All that kind attention could do, and all that money could procure for his comfort and benefit, were brought to his aid; and yet his escape was indeed a narrow one.

I am aware that surgeons differ in opinion as to what treatment is most proper in such cases. When an operation seems requisite, some think best, in most recent cases, to dilate the wound and secure the bleeding vessel. Others prefer to cut down above and ligate the vessel at some point above the injury, unless the injured point can be easily and certainly reached. But the circumstances of this case were very different from a recent one. Here the artery had been wounded twenty-three days. The whole inner part of the thigh was enormously distended by a mass of coagula, forming a tumour which jutted above Poupart's ligament; the healthy condition of the parts had become destroyed; the patient had been reduced to the lowest point by repeated hemorrhages—so low that, when the question was asked "how much blood can this patient yet lose and live?" it was thought he could safely lose *no more;* so that it seemed evident to all that his vitality was too nearly exhausted to admit of false motions. Therefore, had the ligation of the profunda been resolved upon, and attempted, and had it failed, as it certainly would have done, with the whole force of the circulation from above bearing down upon the softened vessels, there would not then have been any chance for a second operation; for, with another gush of blood, and with such a bleeding as must have followed the failure, the patient would have been, indeed, "past all surgery."

Under the circumstances it was undoubtedly good surgery, as all believed, to ligate the iliac, and would have been so had we known at the time that the final operation would become necessary at last; then *à fortiori*, was it good surgery when we did not know that the collateral circulation would so soon find its way through the wounded vessel, and when it was our only certain means of holding on to our patient for a single day.

The diarrhœa, which was the chief source of difficulty from January 11 to the 19th, was a cause of great anxiety, as by it the patient was near being carried beyond our reach. Occasioned by the elimination of offensive matters absorbed from the abscess, it was deemed unsafe to arrest it; but to keep it so controlled as to obviate local mischief, and prevent the distress which it occasioned from exhausting the patient, was truly a difficult task. An emulsion of turpentine and creasote, and preparations containing chlorine, were used with some advantage, perhaps; but nothing would take the place of the acet. plumb. and opium.

I am not able to give the constitutional treatment, as it was varied from day to day to suit the changing indications of the case; nor would it be warrantable to burden this article, which has already occupied much more space than I intended.

Sulph. quinia and opium were given most of the time. Toward the last, sulph. quinia and tinct. stryc., tinct. fer. muriat., and the ternitrate of iron, were used with good results. The raw egg, beat up with brandy and sugar, was his only nourishment for several days; indeed, from December 24 to January 20, he literally subsisted upon it, for it was both his drink and food.

Convalescence, after the 20th of January, was very rapid. The ligature on the profunda came away in eighteen, and the one on the iliac in forty-nine days. The one on the circumflex came away much sooner—perhaps in five days.

Mr. M. has been able to attend to his affairs since early in the spring, and is now (Jan. 11, 1856) on his way to California, whither he has gone to resume an active life of business, with a limb—abating a little lack of endurance, which he is slowly recovering—as perfect, for all practical purposes, as the other.

WESTERN STAR, OHIO, Jan. 11, 1856.

ART. IX.—*Case of Wound of the Occipital Artery and Jugular Vein.—Ligature of Carotid Artery.* Reported by JOHN H. PACKARD, M.D., Resident Surgeon to the Pennsylvania Hospital. (With a wood-cut.)

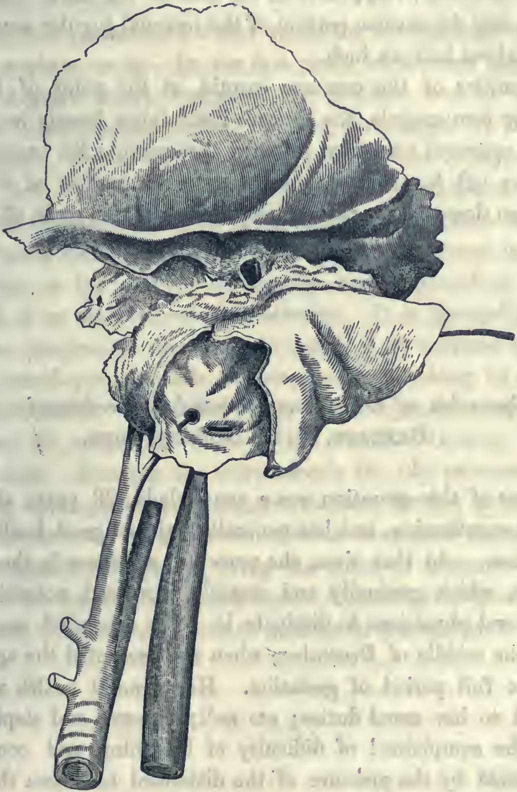
ARTHUR QUILLIN, æt. 46, an Irish railroad labourer of intemperate habits, was admitted into the hospital November 3, 1855. He had been stabbed about ten hours before, while a good deal intoxicated, just below and behind the left ear. Around the wound much swelling and ecchymosis had taken place; a probe introduced into it passed about an inch and a half forwards, and a little inwards. He was covered with blood, but was not then bleeding.

He was placed in bed, and cold water applied; he seemed to do well until *November* 8*th.* He bled slightly from the wound; and in arresting the hemorrhage pulsation was perceived in the swelling, which was now much diminished in size.

10*th.* A consultation having been held, and ligation of the common carotid decided on, Dr. Norris, assisted by Drs. Peace and Pancoast, performed the operation before the class, in the usual mode. The tightening of the ligature, which at once arrested the pulsation in the tumour, was followed by slight convulsive movement, of very short duration. The incision was closed by a single suture and adhesive strips, the patient put to bed, and allowed soup diet. In the afternoon, his lower extremities became very cold; heaters were applied, and the equability of the temperature restored in three or four hours.

19*th.* He was attacked with erysipelas, commencing on the forehead, in the cicatrix of a wound received at 14 years of age. This subsided in about a week.

December 4*th.* At 7 P.M., he seemed doing well; complained of no pain or uneasiness. At midnight, he was seized with convulsions; pulse rapid and feeble; breathing difficult; unable to swallow; only slightly conscious. His left eye was glassy, and highly congested; the right natural. The convulsions recurred at unequal intervals for about twenty-four hours, in spite of counter-irritation; but he became quiet about midnight, Dec. 5, and remained so until Dec. 6th, at 2½ P. M., when he died.



Autopsy, made by Dr. Neill, twenty-three hours after death.—Body much emaciated; rigor mortis well pronounced.

The incision made at the time of operation was extended upwards over the anterior part of the tumour, and then round behind the ear; also, downwards to and along the clavicle.

The flap thus formed being turned back, the external jugular vein was found to be double in the neck, the branches anastomosing twice. A comminuted fracture of the clavicle had been sustained by him some twenty years ago; this was firmly united, and the external jugular was adherent to it posteriorly.

The original wound being now prolonged so as to meet this incision, and the dissection carried deeper, a sac was opened, lined by a clot; at the bottom of this sac could be felt the transverse process of the second cervical vertebra.

Three openings existed on the inner wall of the cavity—one large, the distal orifice of the divided jugular vein; the other two, anterior to this, small and close together, were the cardiac and distal orifices of the almost divided occipital artery. A probe, entered at the external carotid, passed into the cavity of the sac by the former of these two orifices; then its extremity, being inserted into the other, reappeared at the back of the head. (See cut.)

Below the sac, the cardiac portion of the internal jugular vein was entirely occluded for about half an inch.

The extremities of the common carotid, at the point of ligation, were plugged up by firm coagula, the ligature itself lying loosely in the slough.

The brain appeared somewhat softened throughout; the upper and anterior portion of the left hemisphere, and the posterior portion of the right, were entirely broken down into a pasty mass; there was also some effusion into the ventricles.

ART. X.—*Operation of Ovariotomy successfully performed.* By EZRA P. BENNETT, M. D., Danbury, Conn.

THE subject of this operation was a young lady, 23 years of age, unmarried, of good constitution, and has generally enjoyed good health until about two years since. At that time, she perceived a fulness in the lower part of the abdomen, which gradually and steadily increased, notwithstanding the efforts of several physicians to dissipate it. She consulted me, for the first time, about the middle of December, when she presented the appearance of a woman at the full period of gestation. Her general health was yet good. She attended to her usual duties; ate well; digested and slept well until of late, when she complained of difficulty of breathing and cough, on lying down, occasioned by the pressure of the distended sac upon the diaphragm. She also menstruated regularly. I diagnosed ovarian dropsy, and proposed an operation, to which she readily assented. I selected the time of the operation immediately after the cessation of the menses, thinking that, at this time, there would be less fulness of the vessels of this part, and consequently less liability to inflammation. The day previous to the operation, I ordered her bowels to be evacuated by a dose of Epsom salts. On the 12th of January, 1856, with the assistance of my son, Wm. C. Bennett, and in the presence of several physicians, I performed the operation. I made an incision, only three inches in length (being determined to get it through as small an opening as possible), through which I introduced my fingers as far as I could reach. I found no adhesions (and in fact there were none of any importance). I then drew out the sac, turned my patient over on her face, on the edge of the table, and opened the sac, first with a trocar, then with a knife. In this dependent position, I found but little difficulty in so manipulating as very soon to empty the sac of its contents, which I then drew out, passed a double ligature through the pedicle, and cut it off. I closed the wound by three stitches, bringing the ligature out at the inferior angle of the wound, and dressed in the usual manner. The patient recovered without a single unpleasant symptom.

In regard to this operation, I would suggest a few remarks to those who may hereafter venture on it. In the first place, let the new beginner never venture on a doubtful case; but select, if possible, one in which there is a degree of constitutional vigour, not old, or reduced by frequent tappings. If possible, always operate before your patient is tapped at all, for two reasons. 1st. Tapping is apt to be followed by adhesions, more or less extensive, which of course increases the danger of subsequent inflammation. 2d. The fluid being usually albuminous, the patient is reduced in strength in direct proportion to the number of tappings, and is therefore less able to bear the shock of an operation of such severity. It is generally easy to determine, by the progress of the case, whether it is an encysted or abdominal dropsy; but even if you cannot be certain, you lose nothing by cutting carefully into the abdomen. If you find a sac, well and good, go on; if not, why you can let out the water, and close up the wound. Operate early in the disease as possible. Evacuate the bowels freely the day previous, then keep them closed by opium, or some of its preparations, for five or six days. If the patient menstruates, operate two or three days after the menses cease. Enjoin strict regimen and quiet. Keep the room of uniform temperature. Draw off urine for the first five or six days. Use sufficient anodyne to allay all pain, and use as little chloroform as possible in the operation.

ART. XI.—*Central Laceration, and Transit of the Infant through the Perineum.* By JOHN F. LAMB, M. D., of Frankfort, Pa.

PROFESSOR SIMPSON records (*Edinburgh Journ. Med. Sci.*, July, 1855) an example of this rare lesion, as the cause of perineal fistula, and proceeds to say, that he can find only two other cases of similar character recorded. His language leads to the inference, that it is this particular lesion which is rare, independent of its result, in fistula. I may be permitted to add one case, resulting in perfect recovery.

In June, 1821, I was called to attend a primiparous woman, whose age was about thirty years. The pelvis was well formed, and the presenting part was found to be the head; ascertained ultimately to be the occiput to the right sacro-iliac symphysis. The labour was progressing favourably, though for some hours the parts seemed unyielding, and I found it impossible to correct the presentation. As the head advanced, and the pains became strong, my attention was directed to the perineum, which became violently stretched, and I presume, in an unguarded moment, when the support was not where it should have been, the infant seemed really to have jumped through the perineum! Being then a mere novice in obstetrical practice, at the instant I did not understand the nature of the accident. A single pain had expelled the child, which was of ordinary size, and full of life. My first business was to secure and divide the cord, and then to ascertain the nature and extent of the injury, which was directly manifest. The funis umbilicalis was carefully withdrawn from its unnatural channel, and brought out through the vagina. The placenta was detached and expelled without delay or difficulty—when, upon a more careful examination, I found the rent in the perineum very nearly central; the fourchette and the sphincter ani were uninjured, and the accident was attended with very little hemorrhage. A stitch appeared to me to be unnecessary. Having a reliable nurse, I satisfied myself by placing the patient comfortably on her back, with the thighs in close apposition, and impressing on both patient and nurse the absolute necessity of maintaining that position for several days.

On examination at the close of the fourth day, I was pleased to find the edges of the wound adhering with firmness. The patient made a very good recovery, and, indeed, the whole case was attended with so little trouble, that she was scarcely aware that anything very unusual had happened.

The union was firm and perfect, and this patient subsequently gave birth to several children without the recurrence of accident.

REVIEWS.

ART. XII.—*Physiological Chemistry.* By Professor C. G. LEHMANN. Translated from the second edition by GEORGE E. DAY, M. D., F. R. S., Fellow of the Royal College of Physicians, and Professor of Medicine in the University of St. Andrews. Edited by R. E. ROGERS, M. D., Professor of Chemistry in the Medical Department of the University of Pennsylvania. With Illustrations, selected from *Funke's Atlas of Physiological Chemistry*, and an Appendix of Plates. 2 vols. 8vo., pp. 648 and 547. Philadelphia: Blanchard & Lea. 1855.

THERE is no department of Physiology that promises larger rewards to a laborious and judicious investigation than that which is concerned with the chemical composition of the solids and fluids of the body, and the chemical changes that take place in the recesses of the animal organization. While the enlightened physiologist studies, with nearly equal interest, the chemical, mechanical, and nervous phenomena characteristic of vital processes, and regards them as equally expressive of the peculiar character that distinguishes living organisms, it cannot be denied that the chemical portion of these studies is a most inviting one. Notwithstanding, however, its promising aspect, and the abundant labour which has been bestowed upon it, its results have thus far failed to satisfy our expectations. Many brilliant chemico-physiological doctrines, which have grown up from time to time, have proved of but little permanent value; and though the study of physiological chemistry has not been by any means without profit, its results certainly have not corresponded to the labour and genius which have been bestowed on them

One great cause of this misfortune lay in a mistake as to the true relation between chemistry and physiology, and the previous acquirements necessary to enable any one to prosecute the study with advantage. Chemistry, with its symbolical language and magical effects, still retains, in the minds of those unacquainted with its details, something of the old character of mystery with which the alchemists surrounded it. Instead of regarding it simply as the study of the properties and phenomena presented by matter under different external conditions, they are apt to look upon it as a sort of hocus-pocus, by which obscure questions are to be answered in some inexplicable manner. When the physician, therefore, first felt the need of a more complete knowledge of the processes of health and disease than he could gain from ordinary anatomical and clinical sources, he applied for assistance to the professed chemist, very much as he might apply to a fortune-teller. Knowing, himself, next to nothing of chemistry, he hoped to use it as a divining-rod, which should discover hidden sources of knowledge, and enable him to arrive, by an easy path, at results hitherto unattainable. On the other hand, the chemist knew nothing of anatomy and physiology. He analyzed the healthy tissues and morbid products of the body, just as he would the inorganic substances upon which his labours had previously been bestowed. He ascertained their elementary or ultimate composition, and investigated the changes which they suffered by his acids and his alkalies, his burning and his destructive distillation. These were the only points which a purely chemical examination could elucidate; and supposing that such results were sufficient for the requirements of physiology, he applied his conclusions to the explanation of the vital processes in health and disease, disregarding entirely the peculiarities of the animal organization, and the special conditions under which its chemical phenomena originate. These conclusions were accepted by the physician, and constituted, in many instances, the basis of his physiological and pathological theories. It is not, therefore, surprising that doctrines so ill-founded should be rapidly replaced, and that labours so injudiciously directed should produce but few valuable results.

It has gradually become manifest, however, that what is called "Physiological Chemistry," that is, the study of the chemical changes taking place in the body, is really a part of physiology, and not at all of pure chemistry; and that if a previous chemical education, and a familiarity with chemical manipulation be necessary to the physiologist who undertakes it, the chemist has at least an equal need of comprehending the details of anatomy and the general character of physiological phenomena. The knowledge which we require in order to advance us in this important elementary branch of medicine, is not what changes the animal tissues and fluids undergo in the flask and the crucible, but what changes they undergo in the living body; and so long as our investigations in this direction were prosecuted by men who were not familiar with the peculiarities of its structure, they naturally remained sterile and unsatisfactory.

The extent and variety of Professor Lehmann's acquirements make him better qualified to undertake the study of physiological chemistry than most of those who have preceded him. Educated as a professed chemist, he is yet familiar with the details of both ordinary and minute anatomy, and understands evidently the practical requirements of physiological experiment. He starts, therefore, with a decided advantage over his predecessors, and makes, consequently, a greater progress in the end. He takes a physiological, and not a purely chemical view of the question, and treats the subject, if not with the severe and logical accuracy of the French, yet in an exceedingly comprehensive and satisfactory manner.

In his introductory chapter, he exposes the errors of judgment which have hitherto retarded the progress of physiological and pathological chemistry. Perhaps the most prevalent of these, and at the same time the most injurious in its effects, was the practice, which was early adopted, of regarding the *elementary composition* of organic substances as the point of principal importance in the investigation; and of using this elementary composition as a basis upon which to construct, by a sort of chemical divination, a theory of the molecular changes taking place in the body. Thus, chemists, having ascertained the ultimate constitution of albumen, fibrin, the fats, sugars, etc., instead of laboriously tracking these substances in their course though the body, and searching for their mode of origin and their metamorphoses by direct observation, did not hesitate to supply from the imagination what was wanting to experiment; and by moving about on paper their atoms of oxygen, hydrogen, carbon, and nitrogen, like chessmen on a chessboard, showed how ingeniously urea could be constructed out of fibrin, and carbonic acid out of oil and sugar. These conclusions, however, were unfortunately quite destitute of any foundation in nature. The changes which they expressed existed in the imagination of the chemist, but no evidence was adduced that they actually took place in the interior of the body. Such a mode of explaining vital phenomena was not only valueless in itself, but positively injurious, by falsely satisfying the mind of the inquirer, and so shutting up the pathway to more profitable investigation. The entirely baseless character of its results is well exhibited by Lehmann in the following remarks:—

> "Physiological chemistry has given rise," he says, vol. i. p. 19, "to many delusions of this nature, owing to its imperfect development, and to the necessity presented by physiology and pathology for chemical elucidation. Some few isolated deductions were drawn from superficial chemical experiments, and arranged in a purely imaginary connection by the aid of symbols and formulæ, for whose establishment analysis, in many cases, did not even afford any sanction. Thus, for instance, in the attempt to form a conclusion regarding the metamorphosis of the blood from an elementary analysis of its solid residue, and of the composition of the individual constituents of the excretions, there is an utter absence of all scientific groundwork; for, independently of the fact that the elementary analysis of so compound a matter as the blood is incapable of yielding any reliable results, and cannot, therefore, justify the adoption of any special chemical formula, it is assuredly most illogical to attempt to compare the composition of the blood collectively with that of the separate excrementitious matters. In such deductions, expressed by chemical formulæ, the addition of atoms of oxygen, and the subtraction of those of water, carbonic acid, and ammonia, are wholly arbitrary; for chemical analyses do not afford the slightest grounds for the majority of these equations. * * * Chemical equations, having no other foundation than the presumed infallibility of empirical formulæ, must, however, cause us to deviate from the path of physical inquiry, and involve us in a chaos of the most untenable delusions. Thus, for instance, a chemical equation might lead us to conclude that glycine (glycocol) was the source of urea and lactic acid in the metamorphosis of the animal tissues; for we might conclude that two equivalents of hydrate of glycine were decomposed into the above named substances according to the formula $C^8H^{10}N^2O^8=C^2H^4O^2N^2+C^6H^5O^5.HO$. All the experiments hitherto instituted with glycine are nevertheless opposed to such a disintegration. If, then, we would deduce urea and lactic acid from glycine, which has not been proved to exist in the blood, we should be neglecting the most comprehensive rule of logic, according to which, one hypothesis cannot be supported by another. It has, however, unfortunately been too much the practice, in recent times, to employ far more complicated equations as supports for such purely subjective modes of contemplation, by which a semblance of the most exact methods of investigation has been assumed. By these means, a number of chemical fictions have supplanted the fancies of that speculative natural philosophy which in earlier times encumbered the study of physiology and pathology, and have plunged medicine into the midst of a new labyrinth of untenable theories."

Another serious error of previous investigators has been their *disregard*, already alluded to, *of anatomical and physiological conditions.* The fluids, for example, are chemically analyzed, without any clear idea of their anatomical constitution, in such a manner that the most heterogeneous ingredients are arranged side by side, without any account being taken of the essential differences between them. In quantitative analysis of the blood we find, over and over again, the percentage of the blood-globules, which are morphological elements, themselves containing globulin, hematin, fats, etc., estimated in company with that of sulphuric acid, a substance which does not exist at all as such in the blood, but is artificially produced by the decomposition of its sulphates. There are many recorded analyses of the blood, which have evidently been conducted, so far as regards chemical manipulation, with much labour and accuracy, in which we are at a loss to conjecture from what part of the vascular system the specimen was taken. Again, if the blood analyzed were taken from the portal vein, for example, it is not mentioned whether it were taken before or after feeding, or, in the latter case, what had been the quantity and quality of the food. The practical physiologist will at once understand that such deficiencies as these must make the analyses entirely valueless for any purposes of comparison.

In examinations of the morbid tissues and fluids, the particular condition of the patient is imperfectly or erroneously described; and yet an accurate knowledge of this particular condition is certainly necessary to give the analysis any scientific or practical value.

A third source of misconception and wasted labour, in physiological chemistry, consists in overlooking the deficiencies and imperfections of the science in its present condition. We endeavour to establish the relation between two different organic substances, or the connection between two different phenomena, before the substances or the phenomena themselves are thoroughly known to us. The incompleteness of our knowledge with regard to the relative quantity of the different ingredients of the blood, for example, and the practical difficulty of separating them by analysis, are too often disregarded by us, in our haste to grasp at secondary results.

After exposing in detail all these sources of error, and cautioning his readers against them, the author indicates three different methods by which investigations in physiological chemistry are to be carried on, each of which has its own special use, and is applicable to particular questions. The first is what he calls the *statistical* method. It consists in comparing the final products of the animal organism with the substances consumed—the egesta with the ingesta—without endeavouring to establish the intermediate phenomena. This plan, which is limited in its application, is, nevertheless, of great value for some purposes.

> "Some of the most important results" (vol. i. p. 27), "whose solution was specially necessary, were unanswerable by any other method. Thus, for instance, it was ascertained, by an accurate investigation of the food, and its comparison with the constituents of the excreta and of the nutrient fluids, that in the ordinary food of animals, albuminous substances occur in sufficient quantity to compensate for the nitrogenous matters lost in the process of nutrition and in the metamorphosis of tissue; while it was thus, at the same time, shown that the animal organism does not necessarily possess the property of generating albuminous matter from other substances containing nitrogen."

The second method is the *chemico-experimental.* It consists in operating upon the animal substances by the various chemical reagents, the natural conditions of the substance in the body being imitated as closely as possible, and endeavouring to ascertain by inference the possible or probable changes which such substance undergoes in the vital process. Thus the fats are decomposed into glycerine and saponaceous bodies, or give rise to the fatty acids; glykocholate of soda yields glycine, cholic acid, choloidic acid, etc.; and the albuminoid substances leucine, or the various products of combustion. This is the method which has been so much abused by chemists, and which is constantly liable to abuse, from the fact that we can never exactly imitate the physiological conditions by an artificial contrivance, and sometimes this imitation is either altogether impracticable, or is totally neglected. Properly employed, this method may be of service to us by pointing out the direction in which our subsequent researches may profitably be made, but can never supersede the necessity of making these researches. Thus the artificial production of cholic and choloidic acids from glykocholate of soda indicates the possible mode of decomposition of the bile in the intestine, and suggests the search for those substances in the intestinal contents; but it does not give any decisive information, and should always be employed with a clear idea of its true object and limits.

The third method, the most important of all, is the *physiologico-experimental.* This is the method by which the operations of nature are directly observed in the living body itself. A previous acquaintance with the chemical constitution of the different ingredients of the frame is, of course, necessary, and a knowledge of their reactions under artificial conditions highly favourable to success in this line of study. The different ingredients of the food are then followed through the intestinal tract, and their changes and mode of disappearance ascertained. The alterations of the blood in different parts of the system, and under different conditions of fasting and feeding, rest and activity, etc., are similarly investigated. Lehmann indicates fully the value of this method as follows:—

> "We are aware," he says (vol. i. p. 29), "that we shall never succeed in artificially reproducing all the processes as they occur in the living body, since we are here as little able to call forth the necessary conditions and relations, as in the formation of minerals and rocks. It is, therefore, the more necessary to observe a process, of which we cannot judge by imitation, in its course in the living body; and for this end we must chiefly employ natural physiological means. Among these we may reckon the investigations that have been made in reference to the contents of the stomach during the process of natural digestion, to the chemical change of individual substances in the development of the egg during incubation, and to the dependence of the products of respiration on different external conditions. We may further add those experiments that have been made on the changes of individual substances during their passage through the animal organism, or on the effect of different kinds of food, and the metamorphoses of certain nutrient substances during the process of nutrition. To the same method belong all pathologico-chemical experiments, as, for instance, observations on the contents of the intestine after the closure of the common bile duct, and on the blood and other fluids after extirpating or tying the vessels of the kidneys. Chemistry, unfortunately, too often fails us, to permit of our deriving from this method all the results which it appears to promise; it must, however, ultimately furnish the keystone to all physiologico-chemical inquiries, which, without its aid, would continue insoluble enigmas, and would admit of hypothetical, rather than actual explanation."

The plan adopted by Lehmann in the body of the work is to divide his subject into three principal sections. The first division embraces the study of the ORGANIC SUBSTRATA of the body; that is, of the individual substances entering into its compositition, such as albumen, fat, saline matters, etc. The author takes up in succession—

1. *The Non-nitrogenous Acids,* viz: Oxalic, acetic, butyric, lactic, margaric, benzoic, lithofellic acids, etc.
2. *The Nitrogenous Bases:* Creatine, creatinine, urea, glycine, leucine, guanine, etc.
3. *The Conjugated Acids;* or, nitrogenous bodies, of complicated composition, which may be hypothetically regarded as composed of a non-nitrogenous acid, modified by union with a neutral organic substance, as uric, glycocholic, and taurocholic acids.
4. *Haloid Bases and Salts:* Glycerine, fats, etc.
5. *Lipoids:* Cholesterin, serolin, castorin, etc.
6. *Non-nitrogenous neutral bodies:* Glucose, cellulose, milk sugar, etc.
7. *Colouring matters:* Hematine, melanine, colouring matters of bile and urine.
8. *Extractive matters.*

9. *Histogenetic substances:* Albumen, fibrin, casein, etc.
10. *The Mineral Constituents of the body:* Chloride of sodium, iron, the alkaline phosphates and sulphates, etc.

This first division may be regarded as almost strictly chemical in its character. Entirely subordinate to the general scope of the work, its object is to render us familiar with the properties of the different ingredients of the body, so that they be properly distinguished from each other, and recognized with certainty during the course of subsequent investigation.

The second division is more anatomical in its plan, and comprises the examination of the ANIMAL JUICES and of the SOLID TISSUES; that is, it treats of the animal substances, not as isolated and purified by manipulation, but as they occur naturally mingled together in certain proportions, so as to make up the different tissues and fluids of the body. The proportionate quantity of each individual element or "organic substratum," and its mode of union with the rest, lead naturally to a consideration of the properties of the animal fluid or tissue as a whole. When, as for example in the blood and solid tissues, morphological elements occur, Lehmann gives a description of these, and carefully distinguishes their different parts in his analysis. He is careful, also, to indicate the proper mode of obtaining the fluids for examination, a point which has been too often neglected, but which certainly cannot be overlooked without producing serious inaccuracy in the result.

> "The result of the whole chemical operation," he says (vol. i. p. 407), "is often dependent on the manner in which the object is exhibited, and it will be found that an unsuitable method of exhibition frequently leads to the adoption of wholly erroneous views in reference to the nature and function of an animal fluid. It is only when we are convinced that the animal fluid is presented to us in the same state in which it exists in the living body, that we can hope to obtain any physiological result from our investigation. As the exhibition of many animal fluids, moreover, frequently requires that the experimentalist should be familiar with certain anatomico-surgical operations, we think it will hardly be deemed superfluous if we consider the methods adopted for procuring some of the animal juices."

In treating of the *saliva*, Lehmann adopts the conclusion that the secretion acts in the digestion of the food rather by its physical properties, by simply moistening and lubricating the mass, than by any chemical action exerted on the alimentary substances. One of the most interesting points, in regard to this secretion, is its property of converting starch into sugar when artificially digested with it at the temperature of 100° F. The history of opinions on this point affords a very striking instance of the importance, in any physiological investigation, of referring constantly to the living body, as the only source of positive and complete information. Even when we can obtain the animal fluids in a fresh and normal condition, the properties and reactions which they manifest in the flask or the test-tube, do not positively indicate their real action in the vital processes, but only suggest probabilities, which can be ultimately tested in the interior of the organism alone. When the discovery was first made that the saliva had the remarkable property of converting boiled starch into sugar in the course of ten or fifteen minutes, it wa at once accepted as an entire explanation of the physiological destination o the saliva, and also of the method by which the digestion of starch wa accomplished. The French, however, soon found that though this action wa very constant when starch and saliva were artificially mixed, it did not tak place in the stomach of the living animal; and though the Germans at firs asserted that the metamorphosis of starch did really continue in the stomach, later examinations have shown that the statements of the French were correct. We have frequently convinced ourselves, that if dogs with gastric fistulæ be fed on a mixture of meat and boiled starch, no sugar is to be found afterward in the fluids drawn from the stomach. While the meat remains in the stomach, the starch rapidly passes into the intestine, where it is at once converted into sugar, and where an abundance of sugar may be found if the animal be killed a short time after feeding. In this case, the conversion of starch into sugar, which would otherwise be accomplished by the saliva, is checked by the presence of the gastric juice, and does not recommence until the starch has passed out of the stomach, and comes in contact with the intestinal fluids. When starch is taken as a natural ingredient of the food, it is always mixed with albuminous matters, and therefore meets with gastric juice in the stomach. The earlier and erroneous conclusion of the Germans, with regard to this point, were very probably owing to their feeding the fasting animal on pure starch, which, not exciting the gastric secretion, underwent a partial saccharine conversion in the stomach. This, however, did not represent the natural conditions of the digestive process, and the point was afterwards abandoned.

A little difficulty may, perhaps, arise for the reader of the present volumes, from the fact that the English translator appended to his translation of the second edition, published in 1849, '50, and '51, an appendix, taken from the third edition, published in 1853; and the American editor has incorporated these additions into the main body of the text. This is a more convenient arrangement than the other, but occasionally liable to produce some confusion. In the present instance, for example, Lehmann appears to express two contradictory opinions within three or four pages of each other.

"And hence," he says (vol. i. p. 431), "if the conversion of amylaceous matter into sugar be the physiological function of the saliva, its action must not be confined to the short time in which the food remains in the mouth, but must also be continued in the stomach and intestines. Now, we may readily convince ourselves that this is really the case, by observing what occurs in an animal in whom a gastric fistula has been established; for while pure gastric juice exerts no action on starch, sugar may be detected by the ordinary means, in the stomach of the animal, in ten or fifteen minutes after it has swallowed balls of starch, or after they have been introduced through the fistula. Hence, it cannot be doubted that the saliva, after it has been mixed with the other nimal secretions, continues to exert its action on the amylacea in the digestive canal."

Further on, at page 434, he says:—

"Bidder and Schmidt, under whose superintendence the experiments of Iacubowitsch were instituted, have convinced themselves, by later experiments, hat the saliva loses its action on boiled starch in the stomach of the living nimal." * * * "We are consequently led, by the earlier observations of Bernard, as well as by the more recent investigations of Bidder and Schmidt, o the conclusion, that notwithstanding its energetic action on starch, and notwithstanding its abundant supply, the saliva takes no very important part in he digestion of the amylacea. Hence, its principal use in the animal body must be of a mechanical nature. Beside the uses of this nature, mentioned in he text, Bidder and Schmidt believe that one of the main objects of the saliary secretion is its co-operation in the perpetual interchange of the watery uids within the living organism."

The former of these extracts belongs to the second of Lehmann's editions, he latter to the third.

In the chapter on the *Bile*, abundant references are made to the elaborate experiments of Bidder and Schmidt, as well as to those of other observers. The proximate constitution of this refractory secretion seems at last to be tolerably well understood. It is a solution of the taurocholate or glykocholate of soda, or of both, according to the species of animal. Beside these characteristic ingredients, there are cholesterin, fats, fatty acids, pigment, chlorides, phosphates, and alkaline carbonates. With regard to the importance of the bile in the digestive process, Lehmann comes to the conclusion, principally from the results obtained by Bidder and Schmidt, that it is, to some extent, useful in dissolving the fats of the food; but that, on the whole, its agency as a digestive fluid is secondary and unimportant.

"Moreover," he says (vol. i. page 497) "the experiments made on animals in which fistulous openings were established between the gall-bladder and the external abdominal walls (by which means all the bile that was secreted escaped externally), which have led Schwann, Blondlot, H. Nasse, and Bidder and Schmidt to very opposite views, do not prove that the bile exerts any *very* great influence on the digestive process. If animals can live for two or three months, or even half a year, without the passage of bile into the intestinal canal, the function of this fluid in digestion must at all events be a very limited, and probably only an indirect one, and this is the conclusion we should draw from the accurate and ingeniously devised experiments of Bidder and Schmidt; for, as has been already mentioned, the secretion of bile does not attain its maximum till the tenth hour after food has been taken, and by this time by far the greatest part of the ingesta has passed along the duodenum; hence the bile enters the small intestine at much too late a period to exert in it any great influence on the metamorphosis of the chyme. The biliary secretion unquestionably stands in a definite relation to digestion; a relation, however, which must be considered rather in the light of an effect or consequence of the digestive process than as an intermediate link in the process itself."

These conclusions must recommend themselves to all who are acquainted with the present state of our knowledge concerning the bile. Still, they are negative rather than positive, and, so far, are unsatisfactory. The knotty question still remains, "*What is the bile meant for?*" We cannot at all acquiesce on this point in the opinion expressed by Lehmann, according to which the most important function of the liver is the "*formation*, or at all events, the *rejuvenescence of the blood-corpuscles*," and the biliary constituents accessory products of this formation or rejuvenescence. The opinion that the blood-corpuscles perish bodily in any part of the circulation, and are replaced by new globules of fresh formation, is entirely destitute of experimental evidence. There is no reason for considering the blood-globules as less permanent than the fibres of muscle, or any other anatomical element and though they must, like every other constituent part of the organism, be undergoing a constant molecular renovation, yet the products of this molecular change are certainly not the ingredients of the bile; for these substances—taurocholate and glykocholate of soda—are formed, as every investigation goes to show, solely in the liver, and not in any other part of th organism. There is another circumstance, however, connected with the ultimate destiny of the secretion, which is spoken of by Lehmann as "comparatively unimportant," but which, on the contrary, appears to us as mor deserving of attention than any which have yet been mentioned; and that i the *reabsorption from the intestine of certain of its ingredients.* If this statement of Liebig be corroborated, as is highly probable, it will indicate at lea the direction in which the biliary constituents are to be followed; and wi show that, though not a digestive fluid, the bile is certainly destined for us in some other part of the body, for which it is prepared by its passage through the intestine.

The *pancreatic juice* is regarded as principally important in completing the conversion of starch into sugar. The German writers generally refuse to admit Bernard's doctrine, that the pancreatic juice has for its object the digestion of the fatty matters; and, strangely enough, deny even that it forms a permanent emulsion when shaken up with oil in a test-tube. It is not easy to understand why such contradictory statements should be made in regard to a fact so easily observed.

The remainder of the second division is occupied with the constitution of the intestinal fluids, excrements, blood, urine, and the various solid tissues.

The third section of the book, which is strictly physiological in character, is devoted to a consideration of the ZOO-CHEMICAL PROCESSES, or the manner in which the "organic substrata," united with each other in the organic mixtures of the animal fluids and solids, are interchanged and modified in the course of the vital processes. The author takes up the Origin of Organic Matter in the Vegetable Kingdom, and passes in review the general characters of the Molecular Movements in the animal organism, with the special functions of Digestion, Respiration, and Nutrition. The chapter on *Respiration* is one of the most extended and carefully written in the book. It comprises the description of the changes induced in the air and the blood during respiration, the modifying influences of various external and internal conditions, and gives an exposition of the author's views on the theory of respiration and animal heat. When Lavoisier, after establishing the nature of the combustive process, discovered that oxygen disappeared from the inspired air, and was replaced in expiration by carbonic acid and water, chemists and physicians both leaped at once to the conclusion that the true theory of respiration was attained, and that the process was to be regarded as an actual combustion of carbon and hydrogen in the lungs, resulting in the evolution of heat and the production of carbonic acid and water, exactly as it would happen in the furnace or the combustion-tube. The simplicity of the theory recommended it to every one, and it was adopted, at first, almost without question. Subsequently, when it became necessary to modify it in some particulars, its essential character was still retained. It was soon found, for example, that this combustion certainly did not, as previously supposed, take place in the lungs, and it was therefore referred to the capillaries of the general system. Further, the quantity of oxygen absorbed being found to be greater than that returned under the form of carbonic acid and water, it was seen that a part, at least, of the inspired oxygen must be applied to other purposes than the combustion of carbon and hydrogen. Still, the fundamental idea remained, that animal heat was the result of direct oxidation of certain ingredients of the blood which had been absorbed for that purpose; and that the lungs served, at the same time, as the supply-pipe and chimney-flue to the animal furnace. It was, however, overlooked that the evidence of this direct combustion was altogether wanting. In fact, whenever attempts were made to localize it in the body, it always receded before the pursuit of the experimenter, until somewhat recently doubts began to arise whether it really had an existence anywhere, and whether the natural heat of the body were not produced by other chemical changes than those usually known under the name of combustion. In France, Robin and Verdeil have denied positively that this combustion of the blood was anything more than a chimera, and have argued the point in an exceedingly thorough and forcible manner. Lehmann's views are somewhat more moderate than theirs, but he, also, rejects as untenable the substance of the combustion theory, and retains only a portion of its phraseology.

After ascertaining that the blood, in passing through the lungs, absorbs oxygen and exhales carbonic acid, and that the carbonic acid is not produced by direct oxidation in the lungs, but is brought to them ready-formed in the blood, the next most important question that arises for solution is the following: *Whence does the blood derive its carbonic acid?* Lehmann shows conclusively that the origin of the carbonic acid is in the tissues themselves, and not in the blood.

> "It is therefore probable," he says (vol. ii. p. 473), "that also in the higher animals, endowed with true blood, the carbonic acid is almost entirely formed in the functional organs, and not in the liquor sanguinis. And should we then find such great differences, in relation to the amount of gases in the character of the blood flowing to and from the organs (the arterial and venous blood), if all the carbonic acid of the blood flowing to the right side of the heart were formed gradually and alone throughout the whole extent of the blood-column passing from the left to the right side of the heart through the capillaries? No further probabilities need be adduced to prove that the parenchyma of the organs is the seat of the formation of carbonic acid, as we obtain the most convincing proof of the correctness of this view from the admirable investigations of G. Liebig. Although many points may be susceptible of improvement in the method of experimenting adopted by G. Liebig, the main results must continue unaffected. We have already noticed the most essential facts which have been brought to light by these inquiries. We would here only repeat that the carefully prepared frogs' muscles absorb oxygen and exhale carbonic acid so long as their irritability or contractility lasts, and that the latter is lost in irrespirable gases; and finally, that a muscle completely deprived of blood continues to maintain this interchange of gases so long as it retains its contractility. We have here, therefore, not the mere representation, but the perfect expression of the respiration of an organ of a higher animal without blood, and even without any special air-passages; the interchange of gases and the formation of carbonic acid originate here directly from the organ from which the carbonic acid is otherwise conveyed to the atmosphere by various and indirect means (and necessarily through the blood and lungs). As, moreover, these experiments show that the muscles cannot retain their activity without an access of free oxygen, at all events a large portion of this gas must, after its absorption by the lungs, be conveyed in a free state through the blood and the walls of the capillaries into the muscles. The blood is, therefore, quite as well adapted to convey to the muscles the free oxygen necessary for the accomplishment of their functions, as to carry off the carbonic acid formed by this function; the *first interchange of gases* is, therefore, effected in the *parenchyma of the organs* themselves, or if we regard the interchange of gases between two different media as the process of respiration, the first act of this process—the first interchange—is effected between the parenchymatous juice and the blood in the capillaries."

This, it will be seen, is a point of vital importance for forming a correct idea of the respiratory process. It shows at once the incorrectness of that opinion which holds that certain elements of the food, the sugars and the fats, are taken into the blood as oil is poured into a lamp, simply to be burned, without ever being assimilated; and demonstrates that the carbonic acid, whatever be the mode of its formation, is only transported by the blood, and makes its first appearance in the tissues themselves. But animals shut up in an atmosphere of hydrogen or nitrogen still exhale carbonic acid. The carbonic acid, therefore, does not, even in the tissues, originate by means of a direct oxidation, but by a catalysis with decomposition.

"We have already endeavoured to show," says Lehmann (vol. ii. p. 476), "that wherever oxygen and organic matters enter into combination, they do not at once yield carbonic acid and water as the products of their combustion, and that these simple oxides (as in putrefaction and decomposition) are often only simply separated from the oxidized body, without the organic body being entirely destroyed as in combustion."

It follows, then, that the theory of respiration proposed by Lavoisier, and retained, with some modifications, till within a recent period, represents but very imperfectly the changes which actually take place in the living organism. The absorption of oxygen and the exhalation of carbonic acid are the beginning and the end of the process; but between these two phenomena there is no direct connection. They are separated by a long series of intermediate combinations and decompositions, to which the term combustion cannot be applied with any degree of propriety. The true character of the development of animal heat is very happily expressed by Lehmann when he says that it is to be regarded, not so much as the *object* as the *consequence* of most of the chemical movements in the organism.

"Animal heat," he remarks (vol. ii. p. 480), "has, perhaps, been brought too prominently forward in the consideration of the metamorphosis of animal matter, so that it may almost have appeared as if a great number of the animal processes were accomplished solely for the purpose of generating heat in the living body. When we inquire into the objects accomplished in the organism, animal heat acquires a special significance from the fact that most of the higher animals, however they may otherwise differ, are endowed with a power of compensation, which is so carefully adapted to each that even the most different external or internal relations are scarcely able to produce the slightest fluctuations of temperature. The conclusion which we might be led to draw from this fact, in reference to the importance of animal heat for the vital functions, is certainly somewhat shaken by the consideration that many of the so-called cold-blooded animals, from the agility of their movements, the nature of their food, their respiratory equivalents, the energy of their growth and nutrition, in short, from the amount of their metamorphosis of matter, are not so far different from mammals and birds as to establish the necessity of this high degree of temperature for the maintenance of life, and the energetic performance of the most essential vital functions." * * * "All the admirable investigations which have led us to recognize an internal connection between respiration, certain nutrient matters, and animal heat, have afforded us a deeper insight into the vital processes; and hence it is no poetical imagery to connect the life of respiring beings, in reference to their production of heat, with the process of combustion. Animal heat does not, however, on that account, occupy a higher place than every other phenomenon and every other result which is manifested in the active living organism; at once an effect and a cause, it proceeds, as in combustion, from processes on which it exerts a favourable reflex action; it is only one, but not the highest link, of that immeasurable series of phenomena which constitute the true substance of corporeal existence, and is in certain organisms nothing more than the inevitable consequence of the chemical processes of the animal organism—nothing more than the final result of a movement regulated by definite laws."

No one can read attentively Lehmann's work without being persuaded that, while occupying his attention, the subject of physiological chemistry is in good hands. He possesses the two most essential elements of success; for he is thoroughly acquainted with the deficiencies of the science in its present condition, and understands, also, the nature of the questions which it is called upon to solve. J. C. D.

Art. XIII. — *The Transactions of the American Medical Association.* Vol. VIII. 8vo. pp. 763. Philadelphia, 1855.

This volume comprises the transactions of the eighth annual session of the Association. In the proceedings of the session as set forth in the minutes, and in the general character of the reports and essays presented, we can discover no abatement of the zeal and interest manifested on the part of the great body of the medical profession of the United States, in the meetings and objects of its national congress. A zeal and interest that have survived and strengthened under circumstances little calculated to foster them, and which, if they hold out to the end—of which we have little doubt—cannot fail to render the American Medical Association what those who were instrumental in its organization intended it should be—a potent engine of good to medical science, and to those who are engaged, throughout our country, in its cultivation and practice.

The address of the president, Dr. Charles A. Pope, at the opening of the session, is one replete with good sense, and presents several suggestions, as well in reference to the permanent organization as to the future proceedings of the Association, which demand a serious and candid consideration.

That, as Dr. Pope recommends, all the reports and contributions presented at the several sessions should be read *in extenso,* and deliberately and fully discussed, and sent forth to the world with the full sanction, or the candid criticism of the Association, is the deliberate conviction of those who have taken the deepest interest in its welfare. And we believe them to be correct in their views on this subject. It is important that the reports and communications comprising the professional transactions of the Association should either be clothed with the authority of a deliberative assembly composed of those fully competent to judge of their merits, or whatever they may contain doubtful in theory or unsustained in practice clearly indicated; and, in this manner, the disgracious disclaimer of responsibility on the part of the Association for anything contained in the papers published in its *Transactions,* avoided. A disclaimer, we may remark, which is neither complimentary nor encouraging to the authors of the several reports and communications, and which, however little it may be so intended, will be received by many as, to a certain extent, condemnatory.

The other recommendations of Dr. Pope are, the discussion at the sessions of the Association of some of the leading topics of medical philosophy, selected a year in advance, and the holding of the meetings biennially at the city of Washington, and on the intervening years, as now, at different points of the United States.

The first of these suggestions, if adopted, would no doubt greatly augment the interest of the sessions, but, at the same time, it would necessarily extend their duration, and by so doing render it inconvenient, perhaps impossible, for some of the delegates to attend, whose presence is the most desirable. The propriety of the other suggestion will admit of some discussion. For ourselves, we are persuaded that the time has arrived for the selection of a permanent place for the meetings of the Association. It may be desirable, however, that some more central point than the city of Washington should be chosen.

The first of the professional reports in the volume before us is that on the diseases of Missouri and Iowa from 1851 to 1854 inclusive. Such, at least, is its title; it, in fact, contains, however, only an account of the topography and diseases of St. Louis, and of such as prevailed, within the period indicated, in various other portions of Missouri. The report is drawn up by Dr. Thomas Reyburn, from his own personal observations and communications received by him from various physicians residing in different parts of the State. It occupies two hundred and forty-one pages of the *Transactions*, and comprises a large amount of highly interesting and valuable matter. This matter might, however, it appears to us, have been condensed into a somewhat smaller compass, and presented in a form much more instructive and profitable. This would have demanded but little more labour in drawing it up, though it would require a considerable modification in its plan. The several diseases embraced in the report are treated of separately as they presented themselves in different years and localities. It would have been much better, in our judgment, had the observations in relation to each disease been arranged under one head; its prevalence, and the modifications in its character and progress, in different years and at different localities, could be introduced so as to present at one view the facts bearing upon its etiology and pathology derived from the observations within the reach of the reporter.

From the valuable matter comprised in the report of Dr. Reyburn, we should be prompted to make frequent and extended extracts; we must confine ourselves, however, to a few points of particular interest.

In speaking of the cholera infantum as it prevails in the West, Dr. R. remarks:—

"Cholera infantum, within our experience in this section of country, presents variations from its rôle as observed in the country on the Atlantic coast. It is less active in its febrile type, not so much from any reduction or variation in the thermometric range that originates and influences it, as from the constitutional proclivity to disease observed in an infant population, and the endemic causes to which it is here exposed. The causes that, in this section of the West, operate on the adult, producing our climatic fevers, influence the infant subject; hence, in this disease, periodicity, more or less marked, is observed in the febrile movements, and a tendency to exhaustion is apparent. The proclivity to tuberculous meningitis is great in our infant population, and in this and like summer diseases the supervention of head symptoms is very common. The general constitution of the human subject in the valleys of the Western rivers is manifestly influenced by causes which give it less the appearance of vigorous, ruddy health than is observed in the inhabitants of the Atlantic coast. These causes, operating from the cradle to the grave, influence more or less all our diseases, and, in the disorder under consideration, create a less active type of symptoms, and undermine the constitutional power of resistance to its morbid effects. The local remoræ of blood which occur in cholera infantum here, will not bear, as a general practice, the abstraction of blood for their relief; they are more under the control of revellent remedies, not of a depletive kind.

"A form of constitutional irritation to which we may, without being misunderstood, apply the conventional term 'malarious,' occurs in our district, simulating cholera infantum, and is recorded in its name in the weekly mortality reports. It presents the usual gastric and intestinal symptoms of cholera infantum as observed in other sections of the United States. The febrile movements, however, are more recognizably periodic—or, if not distinctly periodic, are yet subintrant or intercurrent in their paroxysms; or a wavy, obscure irritation attends; the surface at one hour being cool, relaxed, and moist; at another, being dry, warm, and harsh; or, perhaps, the general surface will present the concomitants of irritation, with an exhausted state of the vital powers; the extremities being cool or cold, the face pallid and sallow, the skin on the forehead tense and shining, its venous courses turgid, and arteries beating irregularly; one moment with spurious fulness, at another with marked feebleness and irregularity. The state of the nervous system, in this form of disease, is obtunded sensibility; the patient is not so irritable or fretful as somnolent. It may be readily aroused, and its attention briefly directed to any accustomed object, but it will soon relapse into impassiveness or somnolency, as though rest were the desired state. The pupil of the eye is contractile to light, but dilated at the moment the patient is aroused. The globe of the eye is upturned, and the lids are semi apart, while the patient is passive or somnolent; but when aroused the power of the will over the motions of this organ is yet perfect. The fontanelle is now depressed, but becomes distended as disease advances. The general condition, in this stage of the disease, is one of irritation with exhaustion. We have a passive congestion of the brain, depending on—or, if you please, associated with—debility, but a congestion which yet maintains its tendency to terminate in serous effusion from the meningeal vessels. It is a congestion dependent upon defective contractility of the vascular coats, the most important curative of which is quinia, assisted by nutritive, and sometimes by alcoholic stimulants, and by blistering.

"There are cases, however, the pathology of which is not so susceptible of a facile analysis as the foregoing cases, in which signs of subacute meningitis are early associated with the symptoms of cholera infantum, but in which the vital powers are depressed, and we will have the concurrence of subacute hyperæmia with circumstances that forbid depletion. The curative difficulty in such instances is to know how properly to mingle, to alternate, or place in due succession in the treatment two opposite elements, one to abate the existing hyperæmia, the other to support the sinking general powers. We have known cases similar to those we have described as resulting from malarious 'irritation,' depart from their simplicity as they advanced, and present signs of subacute meningitis; the patient finally perishing with evident indications of effusion, the result of undue vascular excitement in the circulation of the brain."

Typhoid fever would appear to be rapidly on the increase in Missouri; we believe that the same remark will hold good in reference to almost every section of the United States. In the report before us, it is stated, typhoid fever, analogous in its general symptoms, and, to some extent, in its pathology, to the disease described by the French authorities, prevails at St. Louis and its vicinity, and is annually increasing, superseding in some degree the endemic bilious fevers.

"It is influenced," Dr. R. remarks, "to some extent, by the causes that produce our bilious fevers, and, for that reason, often manifests marked morning remissions, and evening or nocturnal exacerbations in its symptoms. Its most prominent lesions are found in the mucous coat of the intestinal tube, but not invariably in the solitary and conglomerate glands; cutaneous eruptions, either of petechiæ, vibices, or '*tâches rouges*,' are frequently seen in the disease, but are by no means its invariable accompaniment. The date of time in the fever, at which the enteric complications and cutaneous eruptions appear, is liable to great variation. In some instances, this form of fever often supervenes in well marked regular bilious remittent fever; in other instances, the symptoms of the two diseases—bilious remittent and typhoid fevers—are so interfused as to render the distinction as to which form of fever prodominates, a matter of difficulty, if not a matter of impossibility."

In regard to the use of quinia in typhoid fever; whether given in large doses at the onset of the disease, with the view of cutting it short, or prescribed, during its progress, as a tonic or febrifuge, Dr. R. informs us that—

"The communications he has received from different sections of the State, speak of the efficacy of quinia in the so-called typhoid fevers; but the details of the manner in which the remedy is employed are not given in such form that deductions can be offered from them. Our own experience," he remarks, "enables us to attest the superiority of the quinia treatment in many instances; but the results, in our hands, have not been as fully encouraging as those we witnessed in the wards of the Charity Hospital in New Orleans, in charge of Dr. Fenner; we must acknowledge, however, that our experience with the remedy has not been as ample as that of Dr. F. We have seen the fever successfully subjugated in its early stages by quinia; we have, on the other hand, seen the disease evidently exasperated by it. We have known the quinia prove injurious in the early stage of the disorder, and very promptly efficient in the same cases at a later period. We have, in some instances, seen but negative results from its employment. We have been led to certain deductions in regard to its use, and to these we now adhere. If, in the early stage of the disease, we find but slight reason to apprehend follicular enteritis, if there be a moist state of the tongue, and an occasional tendency to moisture of the general surface, and especially if a remission of symptoms be noticeable in the morning, we test the curability of the case by quinia, exhibiting it in combination with Dover's powder or opium. In the exhibition of mercurials alternately with or combined with the quinia, we are guided by the same circumstances as Dr. Fenner. If diaphoresis is maintained by the remedy, and the nervous lesions are not exasperated, we persist in its prescription, with the expectation of its proving successful. We maintain the influence for two, three, or four days, or until an evident return of functional balance in the system recurs, omitting the mercurial when its propitious effect is established. On the other hand, if, as sometimes occurs, the skin becomes hot and dry under the use of the quinia, the delirium, jactitation, and subsultus increased, and the tongue takes on a dry, red-edged, and pointed appearance, we are then convinced that the remedy is not appropriate to the case, and withhold it for a more opportune moment. Later in the disease, the return of moist and cool surface, with the tongue moist, and clearing off its fur from the edges, and especially if remission of the general symptoms occur, we again resort to the quinia, combining it with opium and ipecacuanha. We now expect that the local lesion in the intestines being subdued, the febrile element in the disorder will give way under the sedative influence of the combination, the irritated play of the heart and arteries be checked, the nervous excitation be subdued, the secretions be restored, and the general nutrition be improved. We believe the disease depends on a blood poison; that the local lesions which complicate it are secondary or consecutive to the morbid state of the blood, and we know of no remedy more efficient in opposing pyæmia and analogous septic conditions of the blood than quinia. It is not the sulphate of that alkaloid to which we give the preference in the treatment of typhoid fever, but the ferrocyanate. This salt is more promptly sedative in its influence over the circulation than the sulphate of quinia, and is not so liable to induce the peculiar and often distressing neuropathia of quinia, that results from the full exhibition of the sulphate. Idiosyncrasies that do not tolerate the sulphate will readily endure the full effects of the ferrocyanate, and we have often found that subjects who will not tolerate a quinia salt uncombined, will sustain its use without inconvenience if it be combined with opium. We have been taught by experience to discard the use of small doses of quinia in this fever, having often witnessed irritant effects on the nervous and vascular systems to result from their use, which on a change to large doses are no longer perceptible."

The following remarks on the accident usually ascribed to sun-stroke are of interest as having a direct bearing upon the proper treatment of the accident in different cases. After noticing the very great mortality produced by the accident in St. Louis, during the excessively hot summer of 1854, Dr. R. refers to the discrepancy of opinion that exists among physicians as to its precise nature and treatment.

"This," he remarks, "results from the fact that two different morbid conditions are included in the title *coup de soliel.* In the one, the prominent symptoms are insensibility, with pallor of the general surface, cold and relaxed state of the skin, oppressed breathing, and enfeebled action of the heart and arteries; in the other form, there is insensibility, but it is unattended with the signs of direct exhaustion that exist in the first. In the former class, the most prominent lesion of function, as manifested by the symptoms, is in the organs of respiration and circulation; there is congestion of the lungs, with consequent congestion of the brain; in the latter, the most prominent lesion is manifested in the cerebral functions; there is congestion of the brain, with a resulting oppression of the general circulatory functions, but not direct exhaustion of the vital powers. In the former, the pallid face, oppressed breathing, cold extremities, and feeble state of the heart's action, attest the nature of the disorder, and indicate the nature of the remedies to be used; in the latter, the state of the pulse, which is indicative of an oppressed, but not a depressed condition of the circulation, with the reddened lips, the injected capillaries of the face, the laboured circulation of the great vessels of the neck, evince a different pathological state from the first form. In cases of the former kind, the cold dash, stimulating frictions of the extremities, the free application of sinapisms, of dry cupping, and, when the power of deglutition returns, the exhibition of diffusible stimuli, are the measures best adapted to obviate the existing morbid state; when reaction recurs, a different order of remedies is required. The cases of the second form are those which have given rise to the opinion that the disease is an apoplectic condition, and that depletion is the proper remedy." "The cases of the disease that occurred in the last summer were not all traceable to direct insolation; the furnace-tenders in engine-rooms, and bakers unexposed to the sun, were sometimes attacked. One case is reported to us of a female who had not been out of the house during the entire of a very hot day, being attacked."

In a communication received by Dr. R. from Dr. S. Pollak, attending physician at the Belcher Dispensary, the latter states that, in the practice of that institution, the almost specific effect of sulphuric acid, as a remedy in diarrhœa, has been established beyond any doubt or cavil. In dysentery it is less reliable, frequently injurious.

"The register," says Dr. P., "shows that, in 1854, 374 cases of diarrhœa were prescribed for, of which 302 were cured by the sulphuric acid alone, with the exception of some adjuvant and corrigent, such as simple syrup, aromatic tincture, or camphor water. With the other cases, the sulphuric acid had to be ultimately resorted to; but it was preceded by some mild cathartic, to clean out the primæ viæ, such as hyd. cum creta, rheum, ol. ricini, and then followed up with sulphuric acid. Opium, as in pulv. Doveri, was only given when combined with any of the above-named cathartics, but never otherwise.

"The majority of cases were cured in twenty-four to forty-eight hours; few required the use of it for four days, and only a very small number took it as long as eight days; they got nothing else, and were cured.

"I here boldly declare that, according to my experience, sulphate of quinia does not more certainly arrest an attack of intermittent fever than the sulphuric acid an attack of diarrhœa. I found it equally efficacious in all stages of the disease, both acute and chronic; in all ages, and both sexes; abundant evidence of this I had in my private practice.

"Were I permitted to draw upon the note-book of my private practice, I could successfully prove, that in the much and justly dreaded summer complaint of children, cholera infantum, it is much preferable to the mercurial, chalk, astringent, and opium treatment. It is even more rapid and more positive in its effects with children than with adults. In cholera asphyxia, also, I found it more efficacious and more prompt in its action than any other remedy I have ever tried or heard of. It answered all my expectations and all my purposes, up to the state of collapse, when, it is generally conceded, it is a mere chance if a patient gets over it.

"The usual dose with me for adults was ʒss of the *acidum sulphuricum aro-*

> *maticum* every four hours; four to eight doses are generally sufficient to effect a cure. The following is my almost stereotyped formula: ℞. Acid. sulph. arom. ℥ss; tinct. cardamomi comp. (or, sp. lavendulæ com.); syrupi simpl. āā ℥j. M. S. Every two hours, two tablespoonfuls. If there be tormina, feeble pulse, general prostration, I added, aq. camphoræ ℥j, and gave it at shorter intervals. The first dose is almost invariably ejected. I then ordered ice-water to be drunk *ad libitum*, in order to soothe and distend mechanically the stomach; had the dose repeated immediately, and have never seen it returned afterwards."
>
> "The light coloured watery evacuations are mostly checked after the third or fourth dose, and bilious, more consistent fecal stools take their place; and not rarely were the bowels constipated for the next two or three days, and required a dose of castor oil to relieve them."

In the same communication Dr. P., after some remarks on chinchonine, quinoidine, piperine, salicine, strychnine, and arsenic as substitutes for quinia in the treatment of intermittents; all of which he believes will answer only when the stock of quinia shall happen to be exhausted, as often occurs in the Western country, informs us that his attention was directed to nitric acid by some remarks he had met with on its effects in arresting the paroxysms of intermittent fever. He determined at once to make trial of it. Since then only twenty-three cases of the disease have come under his observation, in all but one of which the nitric acid proved successful.

> "I sometimes preceded it," he says, "by an emetic or cathartic, according to indications, and then gave the concentrated nitric acid, five to six drops, with some mucilage, every two hours, until sixty drops were taken. It not only prevented the recurrence of the paroxysm, but I have not seen a return of the intermittent fever in any of them, although four to six weeks have elapsed since, and although several have had regular bi-weekly relapses for several preceding months. It may be that the mildness of the type this year contributed to this result. As stated, I have seen but one case to fail. It was prompt and decisive. In one instance, especially, I had only six hours to go upon; the patient had lived almost on quinia for the last year; it made him both deaf and poor; and withal he had regular returns every fortnight. He took ten drops every hour, and no appearance of the paroxysm occurred, and now six weeks have passed and no relapse, just three times as long a period of relief as he ever had since his first attack."

Appended to the Report of Dr. R. is a very interesting note on the supposed interfusion of measles and scarlet fever. The close relationship existing between measles, scarlet fever, and erysipelas has been commented upon by more than one medical writer. That such relationship does exist there can, we think, be little doubt; the interfusion of these diseases is, therefore, a thing to be anticipated; its occurrence we have repeatedly observed. Referring to cases of the interfusion of measles and scarlet fever, Dr. R. remarks:—

> "Their precursory stage presented the catarrhal symptoms of measles; to these were attached the anginose complication of scarlet fever; efflorescence appeared on the third or fourth day, but not so clearly defined as that of measles alone, nor yet of scarlet fever, but the mingling of the features of both eruptions; it would present the large patches of scarlet fever with the crescentic outline of measles; roughness of the surface was perceptible, and the hue of the eruption was intermediate of the two diseases. Desquamation of the cuticle was noticed in some instances; the eruption lasted from two to four days. Dr. George Engleman's attention was particularly given to the subject of the supposed mingling or mutual modification of these eruptive fevers, and we present in brief the conclusions he entertains on the subject.

"Careful observation of a course of a number of epidemics of the eruptive fevers referred to, has led him to believe that the views generally accepted in regard to them are in some respects erroneous, and that our knowledge of these diseases is yet very incomplete. He has been brought to the conviction that an epidemic of scarlet fever can, and often does, change gradually into one of measles, and that the transition form is the disease that, by the German, but not by the English writers, is alluded to under the name 'Rubeola,' and which is here occasionally popularly distinguished as 'French measles,' and in some parts of Germany is known to the people by the name of '*Roetheln.*' It is here not recognized by the profession by any distinct title.

"This form of eruptive fever appears to have been overlooked by the physicians and writers in this country and in England, while in Germany it is considered a variety of the measles proper, or more commonly as a variety of scarlet fever. Some pathologists have supposed it to be a hybrid generated where epidemics of scarlet fever and measles meet. Dr. E. has no doubt, from his observations, that such a disease as the 'Rubeola' of the German writers exists, and that it is neither a hybrid of both the others, nor a variety of one or the other, but a transition form between them.

"The most curious fact in the history of these three different forms of disease is, that each form protects the system from a second attack similar to it, but not perfectly from attacks of the other, so that a subject may have all three forms one after the other; and this further accounts for the frequent observation of a second attack of measles or of scarlet fever, which every physician has seen or heard of. One of the diseases in these cases undoubtedly was rubeola. I have attended several families in this city, Dr. E. remarks, all the children of which had all three forms.

"The principal characters of these three forms are:—

"1st. *Scarlatina.*—Eruption uniform over the whole body, or in large irregular blotches, not elevated above the surface, or with many *miliaria* like papulæ. Mucous membranes of the organs of deglutition affected, those of the organs of respiration primarily unaffected. Desquamation of the cuticle generally in large laminæ or patches. Consecutive diseases principally parotitis and anasarca.

2d. *Rubeola.*—Eruption in spots—generally large—of an irregular angular shape, of a high colour, elevated above the surface, redness disappearing under pressure of the finger, and generally reappearing first in the circumference. Mucous membranes of organs of deglutition, respiration, and vision affected; angina, cough, and coryza present. Desquamation furfuraceous, often slight, or none at all. Consecutive diseases probably the same as those of both the other forms, as the eruption approaches the one or the other.

"3d. *Morbilli.*—Dr. E. finds it necessary to restore, or rather limit this name to the 'Measles,' and the name of Rubeola to the second form described above. Eruption in spots, generally smaller than the foregoing, circular, or somewhat angular, of a pale rose colour, elevated above the surface only in the centre, and redness reappearing there first after pressure with the finger. Mucous membranes of respiration and vision affected; those of deglutition free. Desquamation furfuraceous, generally slight, or entirely absent. Consecutive diseases always affections of the chest; pleuritis with exudations: pneumonia, or asthma.

"It is evident that intermediate forms must be common, and physicians not rarely disagree as to the nature of the disease, some claiming a certain case as scarlet fever, while others name it measles."

The following deductions, made by Dr. Engleman from an extended series of observations on the connection between disease and certain meteorological conditions of the atmosphere, although they refer strictly to the vicinity of St. Louis, are not without interest beyond that region. We are led to believe that a similar series of observations made in other portions of the United States would establish their accuracy in reference to a number of localities.

In these recapitulations of the results of his investigations, Dr. E. has omitted the cholera years.

"1. Either July or September are here the most sickly months in the year. On an average, more sickness occurs in September than in July.

"2. Either in July or in August the greatest mortality occurs. On an average, more deaths occur in July than in August, and in August than in September.

"3. The greatest mortality accompanies the greatest sickliness in July, while the years when the greatest sickliness prevails in September, generally show the greatest mortality in August, rarely in July.

"4. Less than twelve inches of rain in May, June, and July are always accompanied by great sickness and mortality in July, unless this month should have an unusually low mean temperature.

"5. More than twenty inches of rain in May, June, and July generally precede great mortality in August, and a vast amount of sickness in September.

"6. This is especially the case whenever the quantity of rain in August and September is below five inches.

"7. But the rule 5 suffers an exception, whenever the quantity of rain in August and September amounts to more than nine or ten inches. Then the fall is comparatively healthy, even if the summer be wet.

"8. Even with a smaller quantity of rain from May to July, there is much sickness in August and September, whenever the amount of rain in these last months is unusually small, say below three or four inches.

"9. Less than ten inches of rain from May to July, always indicates a healthy fall.

"10. Great heat in July—over eighty degrees mean temperature—is generally accompanied by considerable sickliness and mortality in that month.

"11. But when this great heat in July is accompanied by much rain, over twenty inches, in May, June, and July, the amount of sickness in July is in general not so great.

"12. Higher or lower mean temperatures of August and September do not appear to influence the amount of sickness in the fall season to any great extent.

"The main points of the foregoing twelve paragraphs may safely be assumed to be:—

"A wet summer is a healthy summer.

"A wet fall is a healthy fall.

"A dry and hot summer is a sickly summer.

"A dry fall, whether warm or cool, is a sickly fall.

"A wet summer and dry fall combined, make the most sickly fall.

"These, it may be said, are old observations, well known to the people, especially in the country, and to country practitioners. I fully admit that! All my ambition here consists in substantiating these old maxims by precise statistical and meteorological observations. I have been careful so far not to express an opinion as to causes, but have only given facts, which any one is at liberty to consider as mere *coincidences*. But if the same coincidences are observed for a length of time invariably, we are permitted, I should think, to presume that they stand in some essential or causal connection.

"Without entering now further into that question, I shall only indicate a few, as it seems to me, unavoidable conclusions.

"1. Moisture has more to do with our climatic fall sickness than heat.

"2. But it is not the moisture itself, the precipitated humidity of the atmosphere, which produces sickness; on the contrary, the wet seasons are the more healthy ones.

"3. It is rather the evaporation of this moisture in a dry season, after a wet one, which brings on sickness.

"Whether this effect is produced by the simple physical process of the formation of water gas (evaporation), or by this gas holding in solution, or carrying with it other volatile substances, would lead too far here to examine. I will only state that, to me, the latter is the more probable supposition, and that it appears to lead us back to the old miasmatic theory.

"The question will have arisen, what influence atmospherical pressure may exercise on the character and prevalence of our summer and fall diseases? A careful analysis of my barometrical observations has given only negative results. During August and September, the atmospherical pressure, which from April to July had been below the annual mean, again reaches that point, and exceeds it in the following fall and winter months. The barometrical changes are neither considerable nor rapid in August and September, though a little more so than in July, which month shows greater steadiness than any other month in the year; in August and September, these changes are much smaller than late in the fall, winter, or spring."

The next report is on the hygrometrical state of the atmosphere, in various localities, and its influence on health. It is from the pen of Dr. Sandford B. Hunt, of Buffalo, N. Y. The report is one that will repay fully the time devoted to its attentive study. The author has sketched out, very ably, the leading outlines of the prominent questions embraced in it; leaving it to future more extended observations to complete the task by working out the various details. Thus much Dr. H. considers as established:—

"That certain epidemic diseases are materially modified by *aerial* causes; that these causes alone are not sufficient for the actual production of true zymotic disease, or any other effect save nervous exhaustion; that, combined with the terrene conditions, they exert a direct, marked, and fatal influence upon epidemics, and that these causes are separable; the terrene condition being removable by judicious exercise of a sanitary police, and the aerial causes being avoidable by hygienic measures, based upon a knowledge of the habitudes of aqueous vapour at ordinary temperatures."

In regard to the question whether certain of the zymotic diseases have each a special poison, or are all produced alone by the concurrence of particular aerial and terrene conditions, the occurrence of one or other form of disease being the result of the combination in different proportions of these two conditions, Dr. H. remarks:—

"I am aware that many facts may be brought to support this latter theory. By many minds it would be considered as involved and admitted in the proposition that yellow fever cannot exist without such a combination. The appearance of cholera in New Orleans immediately upon the disappearance of yellow fever; the known fact that a slight modification in the aerial condition is capable of determining whether influenza, pneumonia, or rheumatism shall occur; and more than these analogies, the strong tendency to believe that that which we see and recognize as the active existing cause, is the real and only one, constitute the principal arguments in favour of this hypothesis. But as these combinations must have existed before cholera was known as an epidemic in this country, the fact that it and yellow fever will, after a certain period decline, even though the combination remains to some degree, and the only occasional, but proven occurrence of anomalous cases outside the influence of these conditions, are, to my mind, evidences of a special cause. It is enough that we may control and prevent the ravages of epidemics through these secondary causes, whose existence is known, and whose influences are governable."

The third report is by Dr. Frank H. Hamilton, on deformities after fractures; or, in other words, the deduction of the true prognosis in these accidents from facts collected in the hospital and from the records of such cases as have come under the reporter's immediate care; due regard being had to all those circumstances connected with each fracture which might in any way modify the result; together with the plan of treatment, and the precise amount and character of the imperfection or maiming, if any such remains.

Besides his own cases, Dr. H., in the prosecution of the inquiry imposed on him, has also made use of cases treated by other regularly qualified surgeons, and which have subsequently passed under his observation.

The subject of the report is in every point of view a most important one, and many thanks are due to Dr. H. for the very able and faithful manner in which he has elucidated it. What are the means best adapted to bring the fractured surfaces of a bone in contact, and retain them so until perfect union is effected? Are these means at our command in every case of fracture? Are there, in any case of fracture, certain uncontrollable causes, or circumstances of unavoidable occurrence, that will necessarily prevent union without resulting imperfection or deformity? are questions which the surgeon is bound to ask himself; and unless he possess the proper data for their satisfactory solution, it will be impossible for him to arrive at anything like a correct prognosis in the cases of fracture he may be called upon to treat. It is a duty he owes to himself and to his patients to make himself fully acquainted with those conditions that, with our present means for the management of fractures, should enable him to predict an entirely favourable result, and those again that will render such a result doubtful, if not impossible. Now, the only means by which such knowledge can be acquired, is a full, candid, and faithful report from our public institutions and from surgeons of all the cases of fracture treated in or by them, embracing all the details given in the report before us. A careful analysis of the statistics of fracture thus furnished will prevent the danger of estimating the percentage of cases in which the surgeon has it in his power to effect a reunion of fractured bones, without imperfection or deformity, too high or too low. The one leading to a charge of want of skill, or neglect, under circumstances where no amount of skill or attention could have produced a different result; and the other, to a careless indifference in the management of these accidents, furnishing at the same time a shield to the ignorant from the just punishment of their evident malpractice.

The report of Dr. H. occupies ninety-five pages. To derive from it the valuable instruction it is calculated to impart, it must be carefully studied—it admits of no analysis. Many interesting extracts might, it is true, be made from the practical remarks that are appended to each chapter; we prefer, however, that the report should be consulted as a whole, more especially as we do not feel ourselves privileged to enter upon a criticism of any portion of it.

The succeeding report is on the diet of the sick, by Dr. Charles Hooker, of New Haven, Conn.

The subject is one of deep interest, and, we fear, but imperfectly understood by the profession generally. Strict attention to diet is essential in every case of disease; in some, and those of frequent occurrence, a proper dietetic management is equal, if not superior in importance to the strictly medical treatment. We are persuaded that mistakes are daily committed in this branch of therapeutics, leading to consequences of a more serious character than many practitioners would appear to be aware. In the report before us, Dr. Hooker has presented a very excellent outline of the subject. His views in general will be found to be based on correct physiological and pathological principles, and to be borne out by the results of experience. The remarks offered on the subject of diet in dyspepsia, in phthisis, in typhus fever, in dysentery, &c., cannot be read without profit, affording as they do practical suggestions of very great value.

The following extracts from the section which treats of the dietetic management of pulmonary tuberculosis, present views the correctness of which we have for many years advocated.

After noticing the fact that, although the predisposition to tuberculosis may be manifested at a very early age, it is not commonly developed until after many years, Dr. H. remarks:—

"A long period is, therefore, afforded for preventive treatment, and if due attention were early given to the invigoration of the digestive organs by appropriate medication and diet, we may confidently believe that, in a great proportion of cases, this predisposition might be obviated. Numerous patients who, in infancy and early childhood, showed positive indications of hereditary scrofula, whose parents and other relatives had phthisis, I have kept for years under a course of iron and other tonics, with occasional alteratives, and with a carefully regulated, varied, generous diet, until they have now every appearance of perfect health. Many of them, I have no doubt, but for this precautionary management would, ere this, have died with phthisis. It is an established pathological truth that phthisis is sometimes cured, even in advanced stages, after the formation of large tubercular excavations.

"An interesting case lately terminated under the observation of the writer. A gentleman, who died at the age of eighty-four, came under my care about thirty years since. He then had a large excavation in the upper part of the left lung, and it was stated that about ten years previously he was supposed to be in the last stage of phthisis, to which disease there was a family predisposition. This excavation, therefore, undoubtedly existed about forty years, during which period he constantly had cough, and occasionally profuse purulent expectoration, especially during the last four years; but most of the time he enjoyed tolerably good health, though almost the leanest subject I ever knew. The excavation, which I had watched with much interest for thirty years, was found, after death, to be of the capacity of four or five ounces, and lined with a smooth, red, well-formed mucous membrane—the cavity opening into the trachea by several smooth regular passages, one of them large enough to admit the handle of a scalpel. There was also a large recent excavation in the right lung, with several small suppurated tubercles in both lungs. The habits of this patient had been remarkably regular; he was a prudent, free, good liver, eating freely of fat meats and a full variety of food, and using wine and other stimulants moderately and temperately. Much of the time, also, during this long period, he was under a course of iron, cinchona, and other tonics."

"Other cases might be cited of cure after unequivocal signs of tubercular excavation—several in which autopsy revealed cicatrices where excavations had been discovered by stethoscopic examination. But such cases are, at this day, not uncommon occurrences in pathological investigations. A cure, however, under such circumstances, is so uncommon, that tubercular excavation usually compels an unfavourable prognosis."

"In most cases of phthisis, and of predisposition to it, among other errors of regimen, four may be prominently noticed:—

"1. *Irregular eating.*—Patients often have no appetite in the morning, defer their breakfast until late in the forenoon, and have no regular times for meals. In many cases, the want of regular meals leads to the additional error of taking frequently and irregularly small quantities of light food, such as jellies, custard, arrowroot, &c. Whenever a case excites the sympathy of friends and neighbours, the little delicacies of diet supplied by mistaken kindness are constantly disordering the digestive function. If taken at other times than meals, they effectually spoil the appetite, the maintenance of which is all important in the prevention and cure of phthisis.

"2. *A restricted variety of food.*—As in dyspepsia, the tendency to this restriction is a common difficulty. Indeed, dyspepsia—enfeebled and disordered digestion—may be considered as a common attendant and cause of phthisis. Particular kinds of food are avoided, as they are found successively to offend the weak organs, and thus the diet becomes confined to a narrow range. Frequent change of diet should be encouraged, in order to invigorate the digestive organs by varied exercise, and to afford a full variety of nutrient material to the system.

"3. *The avoidance of oily nutriment.*—An error already fully noticed in this report. Some writers have earnestly recommended a milk diet in phthisis. It may become a partial substitute for fat meat, and its common use as a drink with meals is often advantageous; but an exclusive milk diet will rarely give proper sustentation, and, like other nutrient substances, if used between meals, it disorders the digestive function.

"4. *An excessive use of drinks.*—Most children predisposed to phthisis are often resorting to the pitcher of cold water—a habit which should be carefully restrained; and patients in the progress of the disease, usually have inordinate thirst, the indulgence of which impairs the appetite, vitiates the salivary, gastric, and other secretions concerned in digestion, and, by dilution, weakens the nutrient properties of the food. Excessive drinking thus becomes an efficient cause of the deficient and depraved nutrition which essentially characterizes phthisis.

"So common are those four errors of regimen in the phthisical constitution, yet so much overlooked, that, in consultation, I often find them all associated in a patient, yet wholly unnoticed by attending physicians. Though I would by no means discourage or undervalue medication, I firmly believe that if due attention were given simply to the correction of these errors, even with no medication, more would be accomplished in the prevention and cure of phthisis, than by the most efficient medication without attention to dietetic regimen.

"The great indication in phthisis is to improve the nutrition of the system—to regulate and invigorate the digestive organs by alteratives and tonics, to sustain the appetite, and to supply a regular nutritious and oleaginous diet, varied by the successive use of all common kinds of food—in short, to keep the nutritive apparatus in order, and to give it suitable employment."

The pathology, causes, symptoms, and treatment of scrofula, is the title of the next report. It is from the pen of Dr. Wm. H. Byford, of Evansville, Indiana. Many of the views advanced by the author are ingenious and plausible—many of them bear all the characteristics of truth.

Dr. B. refers the production of tubercle—the identity of which scrofulous depositions he maintains—to an undue augmentation of albuminous matter in the blood; with a diminution of its plasticity, causing its local effusion upon the occurrence of slight congestion of a part. Its prompt absorption being prevented by the superabundance already in the blood, and its low degree of vitality. He thinks it probable, also, that the nutritive elements of the blood are altered during primary assimilation—an alteration consisting in an imperfect development of the proteinous change of the nutritive material.

The condition of the blood just referred to, Dr. B. supposes to be the result of the chronic effects of deficient exercise, bad or insufficient food, bad air, and insufficient clothing.

The hereditary predisposition to tuberculosis, according to Dr. B.'s understanding of it, means

"Nothing more than the organic similarity of the child to the parentage; to be manifested, all things being equal, in similar dispositions and diseases. Practically, too many facts have been collected by the profession, to doubt the correctness of opinions which favour the doctrine. There are but few, however, of the warmest advocates of hereditary descent of scrofulous predisposition, that believe the disease always to originate as a consequence of this cause alone, although many believe it necessary or indispensable to the efficient causative influence of other circumstances. Now, I am not among those who think it scarcely ever, if at all, sufficient, without other favourable influences, of itself to induce scrofula, but that other causes operate with more certainty and rapidity in persons with such proclivity than without them. It is equally correct, I think, to state that the causes which I shall mention directly are quite sufficient to induce scrofula in most persons who were not born of scrofulous parentage."

Although Dr. B. enumerates several other causes as concurring in the production of tuberculosis, yet insufficient exercise he believes to be the most powerful of all generating and determining causes. Exercise, he remarks, is an important roborant and depurator of the system. A want of sufficient action causes languor of circulation, and of pulmonary or respiratory action, deficient secretion and excretion, and thus embarrasses all the other functions.

"While a want of exercise serves to deteriorate the blood in a good many different respects, I think it causes a right state of that fluid to deposit scrofulous matter (or tubercle) in particular. The material which goes to nourish the muscular system, is essentially the same in chemical composition as tubercle. The want of exercise by not consuming the albumen, and on account of the languid condition of the circulation in the excretory organs, preventing the adequate excretion of it, causes an accumulation of that substance in the blood, much above its normal quantity. This accumulation, so far as I can judge, may be demonstrated by chemical analysis, and is the condition, according to the best information I can procure, of the blood in scrofula. And, as before stated, the common rule is, in these cases, a tendency to effusion, which takes place by the operation of slight causes."

We have been long inclined to attribute to deficient exercise a very prominent rank among the causes productive of tuberculosis. Habitual indoor confinement, sedentary occupations unrelieved by active exercise at short intervals, an inert, languid mode of life, broken in upon only by excitements which tax the nervous system without rousing into action the muscular, have been enumerated by all as among the exciting or predisposing causes of tubercular phthisis; and very properly. The baneful effects upon the nutrition of the system, and the sufficient healthy action of nearly all the more important organs of hematosis and depuration of a long continued deprivation from free, varied, regular exercise of the body in the open air, and amid a pure atmosphere, regularly alternated with periods of repose of sufficient duration, especially in the earlier periods of life, have been the theme of every prominent writer on hygiene with whom we are acquainted. Though by no means the only cause of tuberculosis, want of exercise will be found, we are convinced, to be one of its most frequent causes. We may remark, however, that there may be even an excess in exercise. When it is not regulated by the age and strength of the individual, of a monotonous character, and daily prolonged so as to induce overfatigue and exhaustion, active exercise may, when combined with other causes, be as effective in inducing tubercular deposits as the too great inactivity of the body. We should have no hesitation in attributing—and we think facts will bear us out in so doing—to want of sufficient exercise, especially when there is, at the same time, restriction to a diet insufficient in quantity and variety, or unnutritious in quality, and confinement in badly ventilated apartments—either overheated, or of too low a temperature—the great majority of cases of tuberculosis.

The treatment of tuberculosis, as laid down by Dr. B., is based upon the views advanced by him in reference to its causation. The hygienic and therapeutic measures recommended by him are, in the main, correct, and, if faithfully carried out, will, we believe, be more frequently crowned with success than the plan of treatment too generally pursued—a treatment that had its origin in erroneous views of the pathology of tuberculosis, and directed rather to the removal of symptoms, the result of intercurrent disease, than to the eradication of the dyscrasy upon which the morbid condition of the affected organs and tissues actually depends.

The report which follows is that of the committee to investigate the means of preserving milk, and the influence of pregnancy and menstruation on the composition and nutritive qualities of that fluid. It is drawn up by Dr. N. S. Davis, of Chicago, Ill. We regret that, upon the subject of the influence which menstruation and pregnancy exercise upon the milk of the human female, the committee have been unable to report. We hope, however, that they will pursue their investigations in respect to it, and furnish us, at an early period, with its results. The subject is one of deep interest. The discordant views now entertained in respect to it, are mere opinions without the support of facts.

The mode of preserving milk recommended by the committee is that pursued by Mr. S. T. Blatchford, of Dutchess County, N. Y. His process has already been discussed by us in a notice of a report on the subject made to the New York Academy of Medicine by Dr. J. H. Griscom, contained in the number of this Journal for July, 1855.

Report of the Committee on Dysentery, by Drs. H. Taylor and J. H. Beech. This report contains, in the communications from physicians in different portions of the United States, of which it is made up, many interesting facts in relation to the disease of which it treats. The materials thus placed at the disposal of the committee are not, however, arranged in such a manner as to present in bold relief the information to be derived from them, illustrative of the pathology and treatment of dysentery, or the modifications in its character, course, and remedial management observed in different years, seasons, and localities.

We had prepared a careful analysis of this report; but finding it would occupy too much room, we were compelled to omit it.

The report which follows is on the effect of alcoholic liquors in health and disease, by Dr. R. D. Mussey, of Cincinnati, O. The author, in a clear and forcible manner, points out the immediate effects produced upon the vital functions of the human system by the introduction into the stomach of alcoholic liquors, and the baneful results that invariably proceed from their habitual and intemperate use. To the accuracy of the views advanced, and the conclusions arrived at by Dr. M., in reference to the effects of alcoholic liquors in health, we can most cordially and fully subscribe. Not a single fact are we acquainted with, and we have investigated the subject for many years past with much care and industry, calculated to show that the slightest benefit can result, in a single instance, during a state of health, from an habitual indulgence in alcoholic drinks, let that indulgence be as temperate as it may be. While, on the other hand, we could adduce proof upon proof, and that of the clearest and most convincing character, that perfect health, with the free and regular performance of all the functions of the system, during a prolonged existence, may be enjoyed without the ingestion of a single drop of alcohol, in either youth, adult age, or during the declining stages of life. We profess to be, from conviction, in theory and in practice, enlisted on the side of those who proscribe alcohol, in all its forms, as an ordinary or habitual beverage. With Dr. M. we would confine it, "along with its congeners, arsenic, strychnia, morphia, and prussic acid, to the shelves of the apothecary." We cannot, however, estimate at so low a rate, as Dr. M. would appear inclined to do, the beneficial effects of alcoholic liquors as a preventive of disease, under particular circumstances of declining health, or as a remedy in various accidents, and certain morbid conditions of the system. We would separate carefully the question of the employment of alcohol, as a therapeutic agent, from all considerations growing out of its use and abuse as a common beverage. From the ease, however, with which an almost incontrollable appetite for alcoholic liquors, leading to their intemperate use, may be created, it is important that its therapeutic administration should be confined strictly to cases in which we have just reasons for believing it to be our most certain or only remedy for the control of the diseased action or condition with which we have to contend. That such cases do frequently occur, we think no well-informed and experienced physician can deny. To enter into a consideration of the exact nature of the diseased action or condition in which the employment of alcoholic stimulants is demanded, and the class of accidents and diseases with which it is usually conjoined, would lead us into details that it would be impossible to compress within the proper limits of a bibliographical notice like the present.

Dr. Mussey has briefly enumerated some of the circumstances in which, as a remedial agent, he admits that the use of alcoholic liquors has appeared to be followed by good results. Some of those he has included in his list we should be inclined to omit, while there are many not noticed by him in which we are convinced that alcohol, judiciously administered, is an important, if not an indispensable remedy.

A description of an apparatus for the pulverization of caustic substances, by Dr. R. H. Thomas, of Maryland, completes the reports and papers properly included in the transactions of the eighth session of the Association.

We have, then, the prize essay of Dr. James D. Trask, of White Plains, New York. The subject of this essay is the statistics of placenta prævia.

The implantation of the placenta over the mouth of the uterus is one of the most serious accidents which are liable to occur to the parturient female. The unavoidable and often profuse hemorrhage to which it gives rise, from the moment that labour fairly sets in, endangering the life of both mother and child, demands prompt action on the part of the accoucheur. He has little time to deliberate; it is essential, therefore, that he should be fully prepared for the emergency, when it comes upon him, by the acquisition of settled principles of practice. It is his duty to examine carefully and cautiously the merits of the different plans of procedure that have been proposed for the management of the cases in which the accident occurs, and to settle upon that one which shall present the strongest claims for adoption, in consequence of the greater certainty it affords for the safety of mother and child. This is a question, however, that cannot be settled in any other manner than by a series of statistics presenting a comparative view of the results of a sufficient number of cases managed according to the different modes of procedure recommended by the leading obstetrical authorities.

To present such a series of statistics is the object of Dr. Trask in the paper before us. In the preparation of the several tables presented by him, he has shown a commendable degree of industry and research. Though necessarily imperfect in some of the requisite details, his tables are, nevertheless, sufficiently full and explicit to furnish important practical results.

Dr. Trask has taken the trouble to collect all the published cases of placenta prævia he could meet with in the leading medical journals, and in the pages of standard authors, while several have been kindly furnished him by physicians in whose practice they occurred. These cases he has arranged under three heads or tables. 1st. Cases subjected to the various ordinary modes of treatment, embracing recoveries and deaths, and a few cases that died undelivered. 2d. Cases of spontaneous expulsion of the placenta, prior to the birth of the child. And 3d. Cases in which the placenta was artificially detached before the birth of the child.

"We have sought," says Dr. T., "in our analysis of cases, to select from their histories every statement of fact bearing upon the condition of the patient, or upon the influence of medical treatment. These facts have been arranged under particular heads, and in the summary which follows will be found an answer to many interesting and important questions relating to the influence of certain conditions and circumstances upon the well-being of both mother and child."

The following are the general conclusions deduced by Dr. T. from the tables presented in the essay:—

"1. As a general rule, cases in which delivery takes place prematurely are attended with greater risk to the mother than those occurring at the full time, with the exception of those before the seventh month, which rarely prove fatal, in consequence of the undeveloped condition of the bloodvessels of the womb, at that early period. The probablities of the child being saved are probably better at full term, though this is not so distinctly shown by our statistics. Hence, if it be possible, cases in which premature delivery is threatened ought to be conducted to the full period."

"When hemorrhage comes on before the completion of the term of pregnancy, absolute rest and cold, with, in some cases, opium, should be resorted to for the purpose of restraining hemorrhage, *avoiding* the use of the *tampon* until the progress of the case indicates that extreme measures must be resorted to; for the introduction of the tampon in the cases in which it is noted, was, in certain instances, soon followed by labour pains more or less effective. But, when its use is determined upon, a suppression of the hemorrhage may be quite confidently relied upon for a time, at least, provided its introduction be skilfully effected. In many instances, however, at this early period, the hemorrhage continues, and artificial delivery is the only resource.

"2. Most cases of *partial* placental presentation require only rupture of the membranes. By this simple expedient, the uterus is brought into active contractions, and hemorrhage restrained within moderate limits, or entirely suppressed until delivery takes place spontaneously, as occurs in a large proportion of cases, or is accomplished by art. But hemorrhage, in cases of partial presentation, is not always thus controlled, and our first table furnishes not a few which were attended by most alarming loss of blood.

"3. In cases of complete presentation, if hemorrhage does not yield to simple measures, and in dangerous cases of partial presentation early delivery is of the first importance. To select the most favourable opportunity for this is often one of the most critical tests of the physician's skill. To do this before the os has become dilatable, is to incur the risk of inflicting serious lesions upon the uterine neck, and a difficult and protracted withdrawal of the child; while to wait unnecessarily long is to expose the patient to great hazard from unnecessary loss of blood. The rule should be to wait not for a dilated, but a dilatable condition of the os. The great source of danger in the conduct of cases of placenta prævia is the delay required to permit the necessary dilatation of the mouth of the womb: while waiting for this necessary prerequisite to delivery, exhausting hemorrhage has often taken place, from the effects of which the patient has never recovered.

"With the hope of keeping the bleeding in check during this necessary delay, the membranes may be advantageously ruptured, for we need not, in these cases, fear any embarrassment to delivery from this cause, inasmuch as the uterus is almost invariably relaxed after severe hemorrhage. The administration of ergot, under such circumstances, with the view of keeping up a pressure upon the mouths of the bleeding vessels until the os should dilate, is sanctioned by the results of some of our cases in which it was employed; and although not often given, as we judge, with this particular view, it promises to be, in many cases, a valuable resource.

"The inhalation of *ether*, in one instance, quickened labour, and chloroform, in another, seemed to favour relaxation of the uterus. How far these agents, especially the latter, may prove subservient to this important object, experience has not yet determined.

"4. But whatever means may be resorted to for keeping in check the flow of blood while the os is undergoing dilatation, the physician should not leave his patient after that process has begun. Dangerous, and even fatal flooding sometimes takes place even when the os is yet undilated."

"5. But in some instances, hemorrhage will not yield to the means thus far recommended, and the os continues unprepared for artificial delivery. In these cases we may separate the placenta, with the confidence of almost certainly putting an end to the hemorrhage, and with an almost equal certainty of destroying the child, unless the os should permit artificial delivery within a short time after the separation is effected. The urgency of the symptoms in such instances, is sometimes very great, and it must be left to the judgment of the practitioner, in each individual instance, to determine whether to separate the placenta, or wait still longer.

"6. The os may be dilated or dilatable, and the patient in a state of extreme exhaustion. Here, turning could be performed with facility, but delivery would be hazardous. In these cases the placenta may be detached with much less disturbance to the mother than would occur in turning under such circumstances, and an opportunity afforded for the patient to rally before she should be delivered." "Even in these cases, we must bear in mind that children are by no means necessarily destroyed by excessive loss of blood by the mother; and a resort to the stethoscope would doubtless often prove of great assistance, where in doubt as to the propriety of detaching the placenta. When we have satisfactory evidence that the child is dead, there can be no objection to an early resort to the separation of the placenta."

D. F. C.

BIBLIOGRAPHICAL NOTICES.

Art. XIV.—*Report on Insanity and Idiocy in Massachusetts, by the Commission on Lunacy, under Resolve of the Legislature of* 1854. Mass. Leg. Doc. for 1855: House, No. 144. Boston, 1855, pp. 202.

In the spring of 1854 the Legislature of Massachusetts passed a resolution "concerning the Insane" in that commonwealth, and creating a Commission, upon which should devolve the duty of performing the labours and accomplishing the objects specified therein. One of these, and the only one of sufficient general interest to occupy much of our attention, was to "ascertain the number and condition of the insane in the State, distinguishing as accurately as may be, between the insane, properly so considered, and the idiotic, or *non compos mentis;* between the furious and the harmless, curable and incurable; and between the native and the foreigner; and the number of each who are State paupers."

The Commissioners appointed under this resolution were the Hon. Levi Lincoln, Dr. Edward Jarvis, and the Hon. Increase Sumner; but, by a note over the signature of the first and the last of these gentlemen, it appears that the labour was mostly performed, and the report drawn up by Dr. Jarvis.

The work could not have fallen into better hands. The State can furnish no person better qualified for the execution of such a commission. Dr. Jarvis has for many years devoted much of his time to the treatment of the insane. He has written extensively upon the subject of insanity. He was the first, if we remember aright, who exposed those gross and truth-perverting statements, which, in some way which has never been satisfactorily explained, crept into the numericals of the insane of the national census for 1840.

It is believed that no census of the insane ever taken in this Union, as a whole, or in any particular State, where the performance of it rested upon officers of the government, has ever been accurate, or even approximated sufficiently near to accuracy to be at all reliable. For example, in the national census for 1850, the number of the insane of Massachusetts is placed at 1,680, and that of the idiotic at 790. Four years afterwards, the Commission under notice found the number nearly fifty per cent. greater; an increase but very partially accounted for by the augmentation of population.

After considering the various means of taking the census, "the Commission determined to address every physician in the State, asking each one to give information relative to the persons and condition of all the lunatics and idiots within his knowledge. They sent a lithograph letter, stating the several objects of inquiry, and inclosed a printed schedule, or form of return, which contained all the heads under which the answers were to be recorded. They asked for the name, sex, colour, age, country of birth; whether single, married, or widowed; whether lunatic or idiot, present and usual condition; whether mild, manageable, troublesome, excitable, furious or dangerous; whether subject for a hospital or not; length of disease; if periodical, the number of attacks; whether curable or not; whether the remedial influences of any hospital had ever been tried for restoration; where resident, if not in the town of the reporter; and whether State or town pauper, or independent. * * * A pledge was given that none but the Commission should see the names of the persons reported, and in fulfilment of this promise, after the reports were prepared and corrections made for the duplications (two or more physicians reporting the same person), the names were erased."

Sixteen towns have no physician within their limits. The clergymen, over seers of the poor, &c. were accordingly addressed. The subjoined schedule exhibits the extent of the whole of this primary correspondence:—

Physicians within the State	1,556
Clergymen	20
Overseers of the poor	74
Selectmen	4
Other gentlemen	5
Superintendents of hospitals and private establishments in the State	6
Masters of county receptacles, houses of correction, jails, State almshouses	11
Superintendents of hospitals in other States	14
Personal inquiry made of other masters of houses of correction, and jailors	12
	1,702

It was found that 237 of the physicians "were either dead, or not in practice, or had removed away, or were unreliable." Of the remaining 1,319, all but four reported directly or indirectly to the Commission. "Two regular physicians only refused to make any report, and two irregular practitioners have neglected to make returns; but the fields of observation of all these gentlemen were very carefully examined by their more willing or more intelligent neighbours." Every means contributing to thoroughness and accuracy appears to have been brought into requisition by the Commission. They were obliged to "write again and again to many, and to visit and confer with and persuade others in various parts of the State." At the close of the year 1844 the returns were all made, and we fully concur with the Commissioners in the belief that their report is "more complete than could be derived from any other sources, and through any other channels."

From the large number of tables in the Report we condense those statistics which are of most importance, and of the greatest interest to persons without the limits of Massachusetts.

Lunatics.

Whole number of lunatics in Massachusetts, autumn of 1854		2,632
Natives of America, 2,007; foreigners, 625		2,632
Paupers—693 State, and 829 town	1,522	
Supported by their own property, or by their friends	1,110	
		2,632
Curable, 435; incurable, 2018; not stated, 179		2,632
At home or in poorhouses	1,284	
In hospitals	1,141	
In jails, State almshouses, and other receptacles	207	
		2,632
Males, 1,254; females, 1378		2,632
Mild, manageable	1,238	
Troublesome, excitable	1,067	
Furious, dangerous	263	
Not stated	64	
		2,632
Of the 1,522 pauper lunatics, there were—		
Natives of America, 941; foreigners, 581		1,522
At home—Americans, 539; foreigners, 29	568	
In hospital, &c.—Americans, 402; foreigners, 552	954	
		1,522
Mild, manageable—Americans, 464; foreigners, 201	665	
Excitable, troublesome—Americans, 346; foreigners, 300	646	
Furious, dangerous—Americans, 112; foreigners, 75	187	
Not stated—Americans, 19; foreigners, 5	24	
		1,522

Of the 1,110 independent lunatics, there were—		
Natives of America, 1,066; foreigners, 44		1,110
At home, 716; in hospital, &c. 394		1,110
Mild, manageable—at home, 447; in hospital, &c. 127	574	
Excitable, troublesome—at home, 209; in hospital, &c. 212	421	
Furious, dangerous—at home, 26; in hospital, &c. 49	75	
Not stated—at home, 34; in hospital, &c. 6	40	
		1,110
Of the 625 foreigners, there were—paupers, 581; independent, 44		625
At home, 57; in hospital, 434; in receptacles and prisons, 103; in State almshouse, 31		625
Mild, manageable	224	
Excitable, troublesome	315	
Furious, dangerous	81	
Not stated	5	
		625
Curable, 112; incurable, 506; not stated, 7		625
Natives of Ireland, 512; Great Britain, 49; Germany, 23; British Provinces, 17; France, 6; Sweden, 3; Holland, 2; Italy, 2; Spain, 1; Austria, 1; Greece, 1; Egypt, 1; unknown, 7		625
Males, 278; females, 347		625
Of the lunatics at home, the number of proper subjects for hospital treatment was—independent, 323; pauper, 206		529
Lunatics of Massachusetts who are at hospitals for the insane, properly so called, both in and out of the State		1,141
Males, 522; females, 619		1,141
Natives of America, 705; foreigners, 436		1,141
Curable, 206; incurable, 935		1,141
In prisons within the State—natives, 10; foreigners, 11		21
Males, 16; females, 5		21
In "receptacles"—two imperfect asylums at Ipswich and East Cambridge, each connected with a house of correction—natives, 54; foreigners, 92		146
Males, 92; females, 54		146
Convicts—in Ipswich receptacle, 8; in prisons, 8		16

In nineteen small towns in the State there are no lunatics.

A careful perusal of the foregoing statistics will suggest to the mind of the reader many of the ideas which are expressed at length in the report. But from that portion of the document which relates to pauperism, and its connection with insanity, we must be permitted, in justice to our readers, as well as to the author, whose views are original, to make some extracts.

"It is worth while to look somewhat at the nature of poverty, its origin, and its relation to man and to society. It is usually considered as a single outward circumstance—the absence of worldly goods; but this want is a mere incident in this condition—only one of its manifestations. Poverty is an inward principle, inrooted deeply within the man, and running through all his elements; it reaches his body, his health, his intellect, and his moral powers, as well as his estate. In one or other of these elements it may predominate, and in that alone he may seem to be poor; but it usually involves more than one of the elements, often the whole. Hence we find that, among those whom the world calls poor, there is less vital force, a lower tone of life, more ill health, more weakness, more early death, a diminished longevity. There is also less self-respect, more idiocy and insanity, and more crime than among the independent.

"The preponderance of mental defect and disease is unquestionably shown by the comparison of the number of lunatics and idiots in the two classes. None could for a moment suppose that the total of these classes, the independent and the pauper, are in this ratio.

"The whole number of permanent and temporary paupers who were relieved or supported from the public treasury in Massachusetts, during the last year, was 23,125. At the same time the calculated population of the State was 1,124,675; of whom 1,102,551 were independent and self-supporting. These are in the ratio of 1 to 47; whereas the lunatics are in the ratio of 72.9 independent to 100 paupers. Comparing these ratios, we find that the pauper class furnishes, in ratio of its numbers, sixty-four times as many cases of insanity as the independent class. A similar law of distribution prevails in England and Wales."

There is an error in this method of calculation, founded in the fact that many of the insane paupers were self-supporting persons when they became insane, or had, and still have friends by whom they might be supported. This error is mentioned in the report, yet the author arrives at the conclusion that "if all the self-sustaining poor were included with the paupers in the calculation, there will unquestionably be found a much greater ratio of lunatics among them than among the classes more favoured in respect to outward estate."

"It may be supposed from what has been already said, that much of poverty has a common origin with insanity; both of them grow out of and represent internal mental character, or physical condition, as well as external circumstances. Men of unbalanced minds and uncertain judgment do not see the true nature and relation of things, and they manifest this in the management of their common affairs. They do not adapt the means which they possess or use to the ends which they desire to produce. Hence they are unsuccessful in life; their plans of obtaining subsistence for themselves or their families, or of accumulating property, often fail; and they are consequently poor, and often paupers. This unbalanced and ill-regulated mind, and these wayward or loose habits of thought, are among the common causes of insanity.

"The weak mind cannot grasp any complicated design in affairs, nor combine means to produce ends, nor lay and carry out plans of business; the unstable mind changes its purposes, and does not carry out its plans, however well laid. Both of these fail of securing worldly prosperity, and often bring on poverty and pauperism, and they also often produce insanity. People of this class falter beneath the struggles and trials of life, and disappointments bear them down. Their minds become more and more unbalanced and irregular, and at length disordered.

"Likewise some physical causes have their doubly destructive influence upon both the estate and the mind. Intemperance in stimulating drinks, and all sorts of dissipation, disturb and exhaust the brain, and affect its power of correct and ready action; and hence the mind becomes wayward, its operations uncertain and unfitted for the business of life. Hence follow derangements in the affairs of the world, and ill-success and poverty. Hence, too, follow disorders of the nervous system and insanity, which, according to hospital records, find their most common origin in the exciting and exhausting effects of alcohol, especially among the poor. Whatever depreciates the vital energies lowers the tone of the muscles, and diminishes the physical force, and lessens thereby the power of labour and of production. It also lowers the tone of the brain, and the capacity of self-management. In this state the cerebral organ struggles, and may be deranged; consequently we find in the hospital records that ill-health is one of the most commonly assigned causes of insanity. It has its first depressing effect on the energy of physical action and the soundness of the judgment in worldly affairs, and next on the power and discipline of the mental faculties."

The conclusion is arrived at that "the native insane were one in four hundred and forty-five of the native population, and the foreign insane were one in three hundred and sixty-eight of the whole number of aliens in the State." One reason of the greater proportion among the foreigners is believed to be the much larger relative number of them who are poor; another, or others, are found in their habits, condition, and character.

"While 36 per cent. of the American lunatics were sent to the Worcester Hospital within three months after their supposed attack, 70 per cent. of the foreign lunatics were sent in the same period; and while 43 per cent. of the natives were not sent until their disease had been established a year or more, only 11 per cent. of the aliens were kept away so long."

The whole number of insane males is to the whole number of male inhabitants of the State as 1 is to 442; the same proportion of females as 1 to 413. The proportion of insane foreign males to the alien male population is as 1 to 435; that of alien females as 1 to 326.

IDIOTS.

"The witnesses were especially requested to regard the scientific and recognized distinction between lunatics and idiots, and cautioned against the commonly received idea that the term *idiocy* should be applied to all who are deprived of mental power. An idiot is one who was originally destitute of mind, or in whom the mental faculties have not been developed. Those who once had the use of their mental faculties, but have lost them through the process of disease, are not idiots, but demented, deprived of mind which had been once enjoyed. This is a very common result of insanity."

Whole number of idiots in the State		1,087
Males, 622; females, 465		1,087
Natives of America, 1,043; foreigners, 44		1,087
Paupers—Americans, 394; foreigners, 24 . . .	418	
Independent—Americans, 649; foreigners, 20 . .	669	
	——	. 1,087
Under 16 years of age, 254; 16 and over, 799; not stated, 34 . .		1,087
Subjects for hospital, 61.		

Ten of the foreign pauper idiots "were children under sixteen years of age, and probably were brought with their parents, who were naturally unwilling to leave them behind. Only fourteen of these paupers were over sixteen years old. And these are all that could by any means be supposed to be sent to this country from poorhouses abroad to be supported by public charity here; and there is no ground of suspicion that any of these were sent here for this purpose."

"The idiots bear a much larger proportion to the lunatics among the natives than among the foreigners, being in the ratio of 51 native and 7 foreign idiots for 100 lunatics in each class respectively. Although the foreign constitute so small a proportion of all the idiots in Massachusetts, and although the idiots constitute so small a proportion of the foreigners whose minds are defective or deranged, there is probably a large proportion of these native idiots who are children of foreigners, though born in this country."

Among the coloured population of the State there are 9 lunatics and 10 idiots.

In the whole State there is	1 lunatic to every . . .	427	inhabitants.
" "	1 idiot to every . . .	1,034	"
" "	1 either lunatic or idiot to every	302	"
Of the natives there is	1 lunatic to every . . .	446	"
" "	1 idiot to every . . .	889	"
" "	1 either lunatic or idiot to every	295	"
Of the foreigners, there is	1 lunatic to every . . .	384	"
" "	1 idiot to every . . .	7,931	"
" "	1 either lunatic or idiot to every	367	"
Of coloured people, there is	1 lunatic to every . . .	1,025	"
" "	1 idiot to every . . .	922	"
" "	1 either lunatic or idiot to every	485	"

The report proceeds in an exposition of the "interest of the Commonwealth in, and its responsibility for, the proper care of the insane," and of the method by which the "increase of insane pauperism may be prevented." The means suggested for the attainment of this object is that of "requiring the towns to take early measures for the cure of their pauper lunatics who are curable, and also of all others who, though independent, yet, by reason of their lunacy, are likely to become chargeable to the public treasury."

But this cannot be done unless there be a liberal amount of hospital accommodations. The returns in the report show that there are 1713 lunatics (at home and at public institutions), and 61 violent and dangerous idiots; a total of 1774, "for whom the accommodations, or the restoring powers of a hospital should be provided." The Commission examined all the public establishments in which the insane may be legally confined, and a brief description of each is embodied in the report. The four public hospitals for the insane, at Worcester, Taunton, Somerville, and Boston, and the private establishments at Pepperell and Dorchester, have suitable accommodations for but 1017 patients. All the public institutions are full, some of them crowded beyond their proper capacity, and there are 719 persons who now need, but have not, these advantages: 610 of these are at their homes, and the remainder in establishments, from which it is deemed expedient that they should be removed.

One of the specified objects of the Commission was "to see what further accommodations, if any, are needed for the relief and care of the insane." From the facts just mentioned, the conclusion is derived that "the time is ripe for a new effort for those lunatic patients who are at their homes, to save those who are curable from permanent insanity, and give to the others who cannot be saved such an asylum of protection as their own good and the interests of the State demand."

Under this belief, and in pursuance of the duties prescribed, letters were addressed to twenty American physicians, who are, or have been, Superintendents of institutions for the insane, asking them "to advise as to the best method of distributing and providing for the insane."

"Whether it were best to provide, in one hospital, for all classes and kinds of insane persons, male and female, independent and pauper, foreign and native, curable and incurable, innocent and criminal, as is generally done in the United States:

"Or in separate establishments:

"For the males and for the females; or,

"For the independent and the pauper; or,

"For the foreigners and the natives; or,

"For the curable and the incurable; or,

"For the criminals, as proposed by Mr. Ley, of the Oxford and Berks Asylum, and sustained by the English Commissioners on Lunacy.

"They were also asked to advise as to the number that, 'regarding the comfort and improvement of the patients,' can properly be accommodated in one institution; and what number in reference to each of the preceding classifications which should be advised."

Similar letters were also sent to several gentlemen in England and Scotland, who are best known for their intimacy with the subjects in question. All but two of the letters to Americans, and "most of those" to the Europeans, were answered.

"Most of the superintendents of the American hospitals advise that separate institutions should be prepared for males and for females." Two of the British, on the contrary, say that "they should be united;" but the Commission is of opinion that all the advantages derived from separate institutions "are more than counterbalanced by the increase of travel made necessary" thereby.

In regard to distinct hospitals for the curable and the incurable, "the plan now pursued, in nearly all the hospitals of this country and elsewhere, of having both classes together, is deemed the best."

"With one partial exception," the proposition to have separate establishments for the independent and the pauper insane, "finds no favour with any of our Superintendents." In England, this separation is in practice, and is generally recommended. But the report proceeds to show, that what may be proper and best in Great Britain, would be the reverse in this country, inasmuch as the paupers and the poorer classes there are much less intelligent, and less accustomed to the comforts of life, than are those of the United States. The Commission, however, recommends that separate provision be made for the State pauper insane, who are now in the lunatic hospitals, State almshouses, prisons, etc.

All suitable authorities repudiate the idea of the propriety of placing criminal lunatics among the ordinary patients of the hospitals; and yet, both here and in Great Britain, this practice is in vogue. The Commission recommends that, if a hospital for the State pauper insane be erected, "it should include strong and suitable wards for the criminal insane, where they could be securely kept by themselves."

"It is the unanimous opinion of the American Association of Medical Superintendents of Insane Asylums, that not more than two hundred and fifty patients should be gathered into one establishment, and that two hundred is a better number." The American gentlemen to whom letters were addressed concur therein; "or, if they differ, it is by assigning a smaller number." * * "The policy which has built large establishments for the insane, is a questionable one as applied to economy. * * * Besides the increased cost of maintaining, and the diminished efficiency of a large establishment, there is the strong objection of distance and difficulty of access, which must limit the usefulness of a large hospital in the country, and prevent its diffusing its benefits equally over any considerable territory to whose people it may open its doors." From the annals of the State Lunatic Asylum at Worcester, for twenty years, it is shown that, "while Worcester County sent one in 100.8 of its people to the hospital, Hampden sent one in 178.8; Barnstable one in 285; Franklin one in 290, and Berkshire one in 307;" the proportion diminishing as the distance of the counties, respectively, from the hospital, increases.

"The general plan of hospitals for all patients, the curable and incurable, the mild, troublesome, and the dangerous, seems to the Commissioners to be the best for their comfort and improvement, as well as a matter of economy."

A law passed by the legislature of 1836, required "the counties to provide suitable apartments in the houses of correction for the insane and idiotic persons not furiously mad;" but, "in eleven counties it has been a dead letter, and entirely inoperative, and in all the counties it has failed to answer its purpose. The Commissioners conversed with "the sheriffs, or overseers, or masters of the houses of correction, and jailers, who had the immediate charge or the general oversight of twenty of these prisons, and several of the physicians who attended upon these patients when sick. * * They all, with one modified exception, concur in the belief, that the system of confining the insane in any apartments of the prisons, or the connection of the establishments for lunatics in any way with the houses of correction was a bad one, and operated unfavourably both for the diseased patient and the criminal."

A number of State pauper insane are in each of the three State Almshouses at Monson, Tewksbury, and Bridgewater. "It was the opinion of each of the Superintendents" of these establishments, "that the mingling of the State paupers, sane and insane, made the whole more difficult and expensive to manage. It cost more labour, watchfulness, and anxiety to take care of them together, than it would to take care of them separately." Many of the evils arising from this commingling are specified by them in communications to the Commissioners, which are quoted in the report.

The buildings of the lunatic hospital at Worcester are defective in architectural arrangement, as compared with those of similar institutions recently founded. The grounds have become very valuable, and inconveniences have arisen from the growth of the city around them. It has, therefore, been proposed to sell the whole establishment, and create another, more remote from the densely settled portion of the city. The consideration of this subject was also confided to the Commission.

In reference to the various subjects thus committed to them, the Commissioners recommend—

"1. That a new hospital be now erected, in order to accommodate those who are not yet in any such institution, and especially the curable and furious patients.

"2. That the consideration of the sale of the hospital at Worcester be postponed until the third[1] hospital shall be ready for occupancy; and then, if deemed expedient by the legislature, be sold, and another erected in its stead, within the city of Worcester.

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[1] The State has two lunatic hospitals; one at Worcester, the other at Taunton.

"3. That the legislature take into consideration the plan of providing for the State pauper lunatics in a separate hospital, suitable to their condition and wants, where the curable may be restored, and the incurable be properly and comfortably kept.

"4. That the law of 1836, ordering the creation of county receptacles, be then repealed, and the counties be relieved of the responsibility of providing for the wants of the State.

"5. That all the laws in respect to insanity and hospitals be revised, and reduced to a code more suitable to the wants and the practice of the times."

They advise that the new hospital shall be upon one of the great thoroughfares of the State, near some large town or village; that it have not less than 250 or 200 acres of land, and that it be made for not over 250 patients; expressing the opinion that "one for 200 would be probably more advantageous to its great purpose—the healing and the management of the insane, and consequently more profitable to the State." They also advise, "that, in selecting a location, no regard be paid to inducements that may be held out by towns, by the offer of lands, or of subscriptions to aid in the purchase, and that no gifts be accepted that will imply any obligation of the State to continue the institution in a place where it may seem expedient to remove it; and no lesser present interest be allowed in any way to compromise the greater and future interests of the State, and the lunatics for whom the whole institution is to be created. Like discreet individuals, the State should go into the market, make its selection with the sole view of effecting the final purpose, purchase its lands, and pay the usual price, and then be independent of all further obligations."

The objects of this commission were of great import, regarded in the light of either medical science, humanity, or political economy. The pursuit of them involved a vast amount of labour; the results of which are embodied in a work which, in its kind, has never been equalled on this side of the Atlantic, never excelled beyond it. Its statistics are probably more accurate than any of a similar kind which have ever been collected. It is replete with suggestions which, although intended for specific and local application, will be of essential importance and assistance, in each and every other of the States of the Union where the same or similar subjects may come before the attention of the legislature or its Commissioners. P. E.

Art. XV.—*On the Organic Diseases and Functional Disorders of the Stomach.* By George Budd, M. D., F. R. S., Professor of Medicine in King's College, London, &c. &c. Philadelphia: Blanchard & Lea. 1856. 8vo. pp. 252.

The lectures comprised in the present volume have, nearly all of them, appeared before in one of the weekly medical journals of London. They are here collected together in a more convenient form, with such additions and corrections as the subsequent experience of the author had suggested. They present a very clear and sensible exposition of the leading diseases, functional and organic, to which the stomach is liable. The great aim of the author in his discussion of these is to present such views of their etiology and pathology, sanctioned by his own observations and those of the leading authorities of the profession, as are calculated to lead to a correct diagnosis and successful treatment. He indulges but little, if any, in mere theoretical disquisitions; his teachings are restricted to the exposition of well authenticated facts, and their direct practical bearing.

The first two lectures, with the exception of a few introductory remarks on the difficulties attending the study of stomachic disorders, are devoted to a consideration of self-digestion of the stomach, or the softening and destruction of the coats of that organ from the action of the gastric juice after death. The different circumstances under which this accident occurs—its essential characters as revealed upon dissection, and the diseases with which it is usually associated, are very fully indicated.

The accident, Dr. Budd remarks, is usually found in persons who die of disease in some other organ, and of those diseases especially which have long been known to lead to secondary functional disorder of the stomach. As it is, in any case, a clear proof of the presence of active gastric juice, or its acid, in the stomach at the time of death—consequently, its frequent occurrence in those who die of the diseases above mentioned, is an evidence that the functional disorder of the stomach so common in those diseases, is associated with increased secretion of gastric juice or its acid; or with secretion of one or other when there is no food in the stomach, or with undue retention of it in the stomach—so that at the time of death active gastric juice is present in the stomach, and subsequently dissolves or digests its coats.

The question as to how this functional disorder is brought about in the several diseases, and what is its real nature, is disposed of by Dr. B. as follows:—

"When disease of any one organ causes secondary disease of another and distant organ, it must be either through the circulating fluids, or through the nervous system. It is only by the circulating fluids, or through the nerves, that disease of an organ can cause secondary disorder of a different organ remote from it. But in the cases in question, this secondary disorder of the stomach can hardly arise through the blood. Tubercular disease of the lung, continued fevers, inflammatory diseases of the brain, cancer of the uterus, and mere functional disorder of this organ, lead to no common change in the blood by which this peculiar functional disorder of the stomach can be explained. We are driven then to the inference, that the secondary disorder of the stomach in these diseases is produced through the intervention of the nervous system. And this inference is confirmed by the fact, that in phthisis the softening of the coats of the stomach after death, like the functional disorder that usually precedes it, is more common in women than in men; and that when it results from inflammatory disease of the brain, it is much more common in young children than in grown up persons. For the same primary disease, whether it be of the brain or of the lung, the change is most common in those persons who, by their sex and age, are most liable to sympathetic disorders.

"Considering then this functional disorder as a sympathetic disorder excited through the nervous system, the further question arises—What is its real nature? Does this sympathetic disorder affect the secreting apparatus of the stomach, or merely its muscular coat?

"In my last lecture I mentioned the circumstances which led me to infer that the outpouring of the gastric juice, which has been supposed to result from direct irritation of the stomach alone, might also be excited, through reflex nervous influence, by irritation of other parts; that as the flow of urine may be increased by emotion as well as by direct irritation of the kidneys through the blood; or as the secretion of tears may be excited by irritation of the nostril or the mouth, or by emotion, as well as by irritation of the surface of the eyeball; so might the outpouring of the gastric juice be excited by irritation of the fauces, and therefore probably of the lung, or by irritation of the brain, as well as by mechanical or other irritation of the inner surface of the stomach itself. The circumstances which I have brought under your notice to-day confirm this inference, and afford additional grounds for supposing that in many of the cases we have been considering, it is to the secretion of gastric juice excited in this way in the empty stomach, that the symptoms referable to the stomach, and the digestion of its coats after death, are mainly owing; that the secondary disorder of the stomach which occurs in inflammatory disease of the brain, in phthisis, and in various diseases of the abdominal viscera, affects the secreting apparatus of the stomach, as well as its muscular coat.

"The secretion of gastric juice when the stomach is empty of food, is, of course, a waste of digestive power, and necessarily leaves the stomach more or less exhausted for a time. If, after the wasted juice has passed away, more food be taken than the exhausted stomach can readily dissolve, it frets the mucous membrane, and may cause it to secrete an unhealthy mucus, which, acting as a ferment, may lead to the frequent and abundant generation of lactic acid from the saccharine elements of the food.

"In some of the cases to which I have alluded, the softening of the coats of the stomach may, however, be accounted for in another way—namely, by supposing that an impediment existed to the free action of the muscular fibres, so that the stomach could not be completely emptied, and that the acid thus remaining in the stomach after digestion was over, dissolved its coats after death. Softening of the stomach, which may be satisfactorily accounted for in this way, is now and then found in conjunction with cancer of the pylorus, and in some cases of simple ulcer of the stomach, when the ulcer is near the pylorus, or when it is of long standing and partially cicatrized, so that it has altered the shape of the stomach and prevents the proper action of the muscular fibres. The explanation applies also to those cases of phthisis in which the stomach is found much enlarged as well as softened. It was particularly remarked by M. Louis, and has been long known, that the stomach often becomes much enlarged in the course of phthisis, being not unfrequently found after death three or four times its usual size. No satisfactory explanation of this enlargement of the stomach has, that I am aware of, been yet given. M. Louis ascribed it to the frequent cough; but if it were so produced, it would be observed in conjunction with mere chronic catarrh as frequently as with phthisis. The real cause of it is, I believe, enlargement of the liver from fatty degeneration, which always exists in those cases of phthisis in which the stomach is found much enlarged after death. The large liver compresses the pyloric division of the stomach, and prevents the stomach from being emptied through the pylorus by the wasted and weakened muscular fibres. When this happens, some of the acid products of digestion must remain in the stomach, and may be the cause of the softening of its coats found after death. In many cases of phthisis, and in most of the cases of other diseases in which the stomach is found softened, the change cannot be thus explained, and can only be accounted for by the supposition I have before advanced."

Dr. B. points out the importance of an intimate acquaintance with the subject, and the acquisition of clear and definite views of the circumstances under which softening of the stomach is most liable to be met with after death. This is obviously essential with reference to medico-legal inquiries, as well as to the attainment of a right knowledge of the pathology of the digestive organs. The subject is important also in a practical point of view—leading to a more intimate knowledge of a peculiar form of indigestion, of not unfrequent occurrence, attended with various distressing symptoms referable to the stomach and bowels—the result mainly of the presence in them of free, uncombined digestive acid; which symptoms are relieved by the liquor potassæ, and other alkalies and alkaline remedies.

The subject of the third lecture is congestion of the stomach. Dr. B. considers congestion of the stomach to depend upon either an impediment to the course of the blood through the liver or the chest; upon inflammation, the growth of a cancer, or other structural changes in the organ; or upon a change in the relative proportion of the constituents of the blood, or the presence of some foreign matter in it, which, by modifying its consistency, renders its propulsion more difficult; or by changing the chemical relation which naturally exists between the blood and the tissues, may cause it to pass less freely than naturally through the capillary vessels, and so accumulate in them. When congestion of the stomach attains a certain degree, an oozing of blood from the open surface of the mucous membrane takes place, which, if of any extent, gives rise to a vomiting of blood, often in small, blackish coagula; such vomiting constituting, perhaps, the most distinct and conclusive evidence of congestion of the coats of the stomach.

Among the cases of stomachic congestion and consequent discharge of blood by vomiting, which Dr. B. ascribes to a morbid state of the blood, he enumerates that which now and then occurs in females, from a stoppage of their monthly courses; that which is sometimes met with in cases of malignant cholera; the characteristic black vomit of yellow fever; the hemorrhage from the stomach that occasionally occurs in the course of typhoid fever; and, perhaps, the hematemesis consequent upon arrest of hepatic secretion, or a permanent closure of the common gall duct, and that which sometimes occurs in patients who have laboured for some time under great enlargement of the spleen.

Occasionally hemorrhage from the stomach from congestion of its bloodvessels, instead of being the effect of a single condition, is attributable partly to obstruction to the current of blood through the liver, rendered more effective, it may be, by feeble propulsive power in the heart, and partly to an unhealthy condition of the blood itself disposing to hemorrhage, which is sometimes brought on by watching, mental anxiety, or other depressing influences.

The entire lecture is replete with instructive practical remarks, a careful study of which will amply repay the time devoted to it.

The ensuing four lectures are devoted to a consideration of inflammation, and the resulting ulceration of the stomach. Inflammation is considered as of various degrees or kinds, according as it is excited by undigested food, or alcoholic drinks; by more powerful mechanical or chemical irritants, and by defective nutriment, or the presence of noxious matter in the blood.

This manner of treating the subject, which, at first view, strikes us as a very awkward and unscientific one, has, nevertheless, in the hands of Dr. B., enabled him to present a very clear and able exposition of the several forms and grades of inflammation of the stomach as commonly encountered in practice, of a strictly clinical application. That portion of the author's prelections devoted to stomachic inflammation resulting from severe or long continued abstinence, or confinement to food of an unnutritious character, is particularly interesting. He offers, it is true, little that is new upon the subject; his digest of the recorded observations of others, is, however, clear and instructive.

As instances of inflammation of the stomach the result of some noxious matter in the blood, Dr. B. refers to that observed in yellow fever and cholera, and to certain gouty states of the system.

The mammillated condition of the mucous coat of the stomach so generally set down as an unequivocal result of inflammation, Dr. B. admits may, in some cases, be a result of the thickening of the gastric mucous membrane which inflammation causes, but, at the same time, believes that it may equally arise from any other vital process which increases the secreting activity of the cells and favours the retention of the secreted fluids within them.

"That it is not," he remarks, "generally a serious pathological change is sufficiently shown by the observation of M. Louis himself—that often it is not denoted by any symptoms of gastric disturbance, and that it is always found in conjunction with some other disease. Another circumstance which shows that it cannot be considered in all cases a morbid state is, that it is sometimes found in persons killed by accident in the midst of health."

The subject of ulceration of the stomach is treated of with great care and clearness. The perforating ulcer occurs under circumstances which render it difficult to arrive at any positive conclusions as to what agency produces it. It is met with in both sexes, but, as it appears, more frequently in women than in men. It seldom occurs under the age of sixteen, but is met with at all ages subsequently, more frequently, however, according to Rokitansky, in persons beyond fifty than in those under thirty. It occurs in all countries where morbid anatomy is cultivated; in agricultural districts and in large cities. Much more frequently, even considering their relative numbers, among the poor than among the rich. In England, according to Dr. B., it is most commonly met with in the class of maid servants, between the age of eighteen and that of twenty-five. Finally, the ulcer has not been found in conjunction with, or as a sequel to, any other disease, with such frequency as to lead us to conclude that it has any intimate connection with it.

"The circumstance," remarks Dr. B., "if it be true, that the disease is more frequent, relatively to their numbers, among the poor than among the rich, and that it is more frequent among unmarried maid servants than in other classes, would favour the inference, that a state of anæmia disposes to it. But it is almost idle, at present, to speculate further. The observations yet made do not enable us to explain how it is that the ulcer hardly ever occurs under the age of sixteen; how or why it is that the ulcer is always situated in what has been termed the pyloric division of the stomach or in the first part of the duodenum; how it is, again, that the ulcer is generally single, and that it is so much more frequent along the lesser curvature of the stomach, or near it, than in any other part. Peculiarities in the structure or function of the pyloric division of the stomach, or some physiological relation between the stomach and other parts not yet suspected, may, by and by, be brought in evidence, and may, perhaps, furnish satisfactory answers to these important qustions. That there are such physiological relations as I have here suggested, is rendered extremely probable by the remarkable discovery made a few years ago by Mr. Curling, that severe burns are frequently followed, at least in young persons, by a sloughing ulcer of the middle portion of the duodenum, which, like the ulcer of the stomach of which I am speaking, frequently destroys life by eating into an artery, and thus causing sudden and profuse hemorrhage, or by leading to fatal perforation."

In the treatment of ulcer of the stomach, Dr. B. depends mainly upon a proper regulation of diet, with the trisnitrate of bismuth, and magnesia to obviate acidity; powdered ice to allay undue irritability of the stomach; opium to appease pain and obtain quiet nights; the aloetic or compound colocynth pill to obviate costiveness; perfect rest, abstinence from food, turpentine, acetate of lead, opium, alum and tannin to restrain hemorrhage; citrate of iron to remove the anæmia consequent upon profuse hemorrhage, and when feverish symptoms arise with much tenderness at the epigastrium, abstinence from food, opium, and rest. By this treatment, for the details of which we refer to the lecture before us, Dr. B. states that, at the hospital, he has had positive proof in several instances, that ulcers of the stomach have healed. In most cases, perhaps, Dr. B. remarks, the chief impediment to the cure of these ulcers, when they are not large or of long standing, arises from the difficulty of making the patient submit long enough at a time to the restricted diet that is necessary for it. The pain may not be sufficiently severe, or the general symptoms sufficiently alarming, to furnish an adequate motive for so much self-denial. The ulcers consequently persist until they cause perforation, or, until, from their edges becoming thick and hard, they are very difficult to heal.

The eighth lecture is on cancer of the stomach. It contains a very able digest of the leading facts in relation to the character and progress of the several forms of cancerous disease with which the stomach is liable to be affected, the symptoms to which they give rise, their diagnosis, and the ameliorative treatment best adapted to lessen the sufferings of the patient.

The sympathetic disorders of the stomach resulting from irritation seated elsewhere are treated of in the ninth lecture. The very excellent remarks of the author on these affections have a decidedly practical bearing. The treatment of them when considered separately from the remote irritations by which they are produced and kept up, can of course be only palliative, though, in many cases, this becomes of no little importance from the distress and suffering to which they give rise. Their removal can seldom be effected until a cure of the diseases of which they are symptomatic is effected.

In the ensuing lecture, the subject discussed is the deficient secretion of gastric juice, the circumstances under which it occurs, and the results to which it gives rise, the more prominent of which is slow and imperfect digestion; the morbid phenomena consequent upon which are well delineated by Dr. B., and the treatment adapted to restore the secretions of the stomach to their normal condition, and in this manner enable it to digest the food introduced with sufficient promptness and perfection, is very clearly pointed out. One of the frequent consequences of the imperfect supply of the gastric juice and the impediment which thence arises to the regular and proper changes being effected in the food taken into the stomach, is the fermentation of this in its half digested state, giving rise to flatulency and the formation of various acids. A particular kind of fermentation thus occurring in the contents of the stomach is attended with the formation of those curious bodies, the *sarcinæ ventriculi*, first discovered by Mr. Goodsir, in 1842. All the facts known in relation to this particular form of stomachic fermentation, or, perhaps, more correctly speaking, of some of the conditions under which sarcinæ have been met with in the stomach, are presented in the eleventh lecture. From these, however, no important general conclusions can be drawn in regard to the mode of production of the bodies referred to. It appears to Dr. B. from the details of the cases given by him, and many similar ones on record—

"That the peculiarity of the disorder we are considering consists in this, that the secretions of the stomach, which seem to be usually more abundant than natural, undergo, or excite in the food in the stomach, and after they have been thrown up from it, a fermentation which is attended with the evolution of carbonic acid and with the production of torulæ and sarcinæ, and which leads to the formation of acetic acid. The production of the disorder seems to require that there shall be some condition which prevents the stomach from completely or readily emptying itself.

"The disorder may occur in young persons, and exist for a short time, as in one of the cases related by Mr. Bush, and in a case that has been recorded by Dr. Bence Jones, in which it was noticed a short time before death in a boy of fourteen, who died of peritonitis and granular disease of the kidney, but it has been more frequently noticed in men who have reached middle age—persons more liable than any others to simple stricture and cancer of the pylorus and to other diseases which prevent the stomach from completely emptying itself—and in such persons the malady is usually of long duration, and may, indeed, continue to the end of life."

The remaining five lectures are devoted to the consideration of the subject of indigestion generally. The entire subject is treated with great ability under the heads of Indigestion arising from defective action of one of the excreting organs, or from some fault in the nutritive processes in other parts of the body; the purity of the blood being, in this manner, impaired, rendering, as a consequence, the secretions of the stomach insufficient or unhealthy. Thus, indigestion is a common result of defective action of the liver or of the kidneys, as well as from faulty assimilation, giving rise to the formation of the lithic acid or oxalic acid diatheses.

The remarks of the author in reference to these forms of digestion are replete with good sense and have a direct and important practical bearing.

Dr. B. considers next the forms of indigestion characterized by some peculiarity in the symptoms—urticaria, pyrosis, gastralgia, etc. The indigestion of drunkards is treated of separately. The general symptoms of stomach disorders—pain and soreness of the epigastrium, vomiting, excessive acidity and flatulence are then discussed.

Acidity of the stomach may, according to Dr. B., result either from acid poured out by the glands of the stomach; from acid taken in the food, or generated by some fermentative process occurring in the food within the stomach.

"The glands of the stomach," Dr. B. remarks, "only secrete, as far as we know, muriatic acid, perhaps lactic acid, and, in certain circumstances, carbonic acid. There may be generated in the stomach by different fermentative processes—lactic acid, acetic acid, oxalic acid, butyric acid, carbonic acid, and probably many others. The acids that cause excessive acidity of the stomach are the muriatic and the lactic, singly or combined. Acetic acid is formed more rarely; oxalic and butyric acids in too small quantity to produce this effect; and carbonic acid seems to be only troublesome or injurious from the flatulent distension it occasions."

Flatulence of the stomach may, Dr. B. believes, be ascribed to one or other of the three following sources: 1. Air swallowed. 2. Gas generated from food or secretions in the intestinal canal by some fermentative process. 3. Gas secreted or evolved by the coats of the intestinal canal from the blood.

Some have affected to deny the possibility of gas being in any instance abnormally secreted or evolved from mucous or other surfaces. The fact is now, we believe, very generally admitted. The only gases the blood contains are those of the inspired and expired air—oxygen, nitrogen, and carbonic acid—and it is clear that oxygen, which is constantly needed in the blood, and which it is the business of respiration to supply, cannot be exhaled; so that the only gases that can pass directly from the blood into the intestinal canal, are nitrogen and carbonic acid. It follows, therefore, as Dr. B. states, that no oxygen can get into the intestinal canal excepting from air swallowed, and that its amount cannot be greater than in that; namely, than one volume to four of other gases.

"The gases furnished by fermentative processes in the intestinal canal, are carbonic acid, hydrogen, different compounds of hydrogen and nitrogen. Lactic and the viscous fermentation may occur without any evolution of gas. Vinous fermentation evolves carbonic acid; butyric fermentation, carbonic acid and hydrogen; common putrefactive changes generate these gases, nitrogen, and various compounds of hydrogen, such as sulphuretted hydrogen, carburetted hydrogen, and ammonia. While these gases are being evolved, the quantity of oxygen in the intestinal canal, derived from the air swallowed, is gradually lessened by some of it entering into combination with other substances and some of it passing, without change, into the blood. Stinking putrefactive changes—leading to the evolution of sulphuretted and carburetted hydrogen—require some time for their production, and are retarded by the acids of digestion, so that they seldom take place in the stomach, but are very common in the large intestine. When they do take place in the stomach, they are recognized by the eructation of the fetid sulphuretted hydrogen gas—the belching as of rotten eggs. The gases evolved by the ordinary fermentative processes in the stomach, consist of carbonic acid and hydrogen, and of carbonic acid in greater amount than hydrogen.

"The ordinary gases of the stomach are, therefore, oxygen, nitrogen, carbonic acid, and hydrogen. The oxygen is derived solely from the air swallowed, and its proportion to the other gases can never be greater, and must generally be very much less, than its proportion in atmospheric air. The hydrogen must be derived from some fermentative process, and must be much less in volume than the carbonic acid. So that when *distension* of the stomach occurs, it must be chiefly from nitrogen or carbonic acid; and if from carbonic acid, this must be derived, for the most part, from some fermentative process."

In discussing the treatment of stomachic disorders, Dr. B. passes in review the curative effects of ipecacuanha, bismuth, the vegetable astringents, hydrocyanic acid, the alkalies, the mineral acids, the vegetable bitters, the preparations of steel, and purgatives; noticing the particular indications they are severally adapted to fulfil, the particular cases and conditions of diseases in which they may be most profitably resorted to, and the forms and doses in which they are to be given; the remedial treatment being followed by a judicious set of rules for the dietetic management of the affections of the stomach originating in defective or disturbed digestion.

The five lectures devoted to a consideration of the pathology, symptomatology, and treatment of these affections, are replete with sound views and valuable practical directions. They will communicate to the medical student a very faithful idea of a class of diseases every practitioner will be called upon repeatedly to treat, and in which, by a correct appreciation of their several forms, and the nature and right application of the means adapted for their removal, he may promptly relieve his patients from much suffering and distress; or by mistaken views, an improper selection or wrong application of remedial measures, aggravate the disorder which it is his object to remove, or convert what was a perfectly controllable into an incurable disease.

Nor will the physician find the time devoted to the study of these lectures unprofitably spent. He will acquire from them many a practical hint of invaluable service to him when prescribing for some of the not uncommon, but more obscure forms of stomachic disease. D. F. C.

Art. XVI.—*Digestion and its Derangements. The Principles of Rational Medicine applied to Disorders of the Alimentary Canal.* By Thomas K. Chambers, M. D., Fellow of the College of Physicians, Physician to St. Mary's Hospital, and Lecturer on the Practice of Medicine at St. Mary's Medical School, London, etc. 8vo. pp. 441. New York, 1856. S. S. & W. Wood.

The organs of digestion, in the human subject, are, of all others, the most liable to derangement. The majority of their diseases are, however, neither difficult to remove, nor, in themselves, imminently fatal. The several morbid conditions of the digestive tube and its associated organs are, nevertheless, of importance, as well from the pain and distress by which they are so commonly attended, the impediment they interpose to perfect alimentation, and the regular and healthful nutrition of the system, and the tendency they have to induce, ultimately, morbid action in other organs of the body, both neighbouring and remote. They have, in consequence, always attracted the attention of medical men, and given rise to numerous able treatises devoted to the especial consideration of their pathology and treatment.

In another part of the present number of our journal will be found a notice of the work of Dr. Budd on the affections of the stomach, and we have now before us the still more recent publication of Dr. Chambers on the physiology and derangements of digestion. Both these works are of very high character, though differing considerably in their general plan, scope, and character.

The treatise of Dr. Budd presents a plain, practical exposition of the various derangements and diseases of the stomach, their nature, diagnosis, and treatment—the physiological facts necessary to a correct appreciation of the several pathological conditions of the organ being considered in immediate connection with those conditions. In the work of Dr. Chambers, the physiology of digestion is first very fully treated of, and then, the several abnormal conditions of the alimentary canal, the pancreas, and liver, by which digestion is impeded or deranged; the great object of the author being to exhibit an example of the mode of treating pathology and practice, "which may be justly called rational medicine—that is, the deduction of our rules for the management of disease from the scientific observations of health."

A pathology based on physiology is, unquestionably, the only philosophical and safe exponent of the natural history of disease. Unfortunately, however, our knowledge of the functional action of the several organs is, as yet, imperfect; while, of the intimate vital processes, in the disturbance or perversion of which morbid action mainly consists, we are still, in a great measure, profoundly ignorant. Consequently, in our pathological researches, we are able to avail ourselves of the sure light of physiology to a very limited extent. In those very circumstances in which that light is the most needed, it fails us entirely. We are still necessitated, in the study of disease, to limit ourselves to the field of simple observation. In respect to therapeutics, it will be found, we fear, that physiology can afford us but little aid. The efficiency of any given remedy or course of treatment, in the removal or modification of the morbid action or condition of a part, can be learned from no other source than experience—the result of repeated and cautious observation. It is not until we shall have acquired from this source a knowledge of the actual kind and degree of modification which each remedial agent produces in the vital conditions and actions of the several tissues and organs that we can expect a system of therapeutics based upon physiology to be established.

The account given by Dr. Chambers of the structure and functions of the digestive organs, and of the physiological action of substances submitted to absorption in the alimentary canal, is a very full and excellent one, embracing a fair digest of the views of the most authoritative of modern observers in relation to the several questions involved in the general subjects of digestion and alimentation. Occasionally, it is true, the teachings of the author are tinctured by hypothetical assumptions of a rather doubtful character—taken as a whole, they are, nevertheless, particularly interesting and instructive.

In his account of accessory foods, that is, those by the use of which the metamorphoses of the organic structures are modified, so as best to accommodate themselves to required circumstances, Dr. C. divides them into increasers of metamorphosis, and arresters of metamorphosis Among the first, he ranks water and kitchen salt; and among the second, alcohol, tea, coffee, and chocolate.

After an eulogium upon alcoholic drinks as a means, when temperately enjoyed, of advancing a people in the scale of humanity, Dr. C., basing his conclusions mainly upon the experiments of Dr. F. W. Böcker, attempts to prove that alcohol—

"By raising the nervous energy, enables a man so to use his body that, during his consequent rest, he absorbs or fixes enough to place himself in a better state than before. It prevents that exhaustion or wearing out of the absorbing tissues, which makes the machine less efficient for growth than before; and it allows, without damage, a certain amount of extra work, bodily or mental, to be imposed, by using indeed the substance of the body for a time, but enabling it to be replaced with interest afterwards."

He, however, very honestly admits that these advantages, which he supposes to flow from the use of alcohol, are not to be gained without the chance of paying a price for them.

"Dr. Böcker," he remarks, "has taken the opportunity of comparing the blood of persons accustomed to drink brandy daily, *but not in excess*, with that of a typical abstainer; and he finds it, as a whole, deficient in solid organic constituents, deficient in fibrin as compared with albumen, and with the red clot more carbonized, or, at least, more black than in perfect health. At the same time, there is an excess of the pale or colourless corpuscles over the number which ordinary blood possesses. That is to say, in short, that the blood is less vitalized, anæmic, and at the same time too venous—too much in the condition of that of the portal system; it retains too much of the effete matter. Such is the bad effect of alcohol taken as a daily habit for a long time; and the question is whether each indulgence in its use adds a grain to the heap, or whether we may not get the good out of it and avoid the evil. It is possible that the defensive power of alcohol may be the result of purely chemical or other physical agencies; that merely by its reactions on the corporeal substance it may enable the body to make up for the primary loss sustained. But this is only a possibility, and cannot yet be stated as a fact in favour of alcohol."

Alcohol has not been shown to possess the power of sustaining life force with a diminution of the waste of tissue. The evidence adduced to prove that it arrests metamorphosis tends rather to show that, by the obstruction it causes to the normal action of those organs, the office of which is to remove from the blood the hydro-carbonaceous products which are derived from the continual decomposition of the tissues, alcohol is, in fact, an arrester of hæmatosis, inasmuch as it retards its depuration, and thus gradually perverts the nutritive or assimilative process. This is evidenced by the fatty degeneration of the heart and arteries, of the kidneys and liver it induces—the cirrhosis of the latter being a pathological condition of extreme frequency in the habitual consumers of alcoholic drinks. The consumption of these drinks gives rise, also, to an undue accumulation in the blood of azotized substances, and hence the uric acid diathesis so commonly encountered in the votaries of Bacchus.

In taking up the several derangements of digestion, Dr. Chambers considers first those changes in the portions of the organism concerned in the function which are common to the whole alimentary canal. These are: A. Changes in the epithelium of the digestive canal—under which head he arranges, 1. Paralysis, or arrested secretion, either from poisoned blood or defective innervation; such as takes place in low zymotic fevers, or in the secondary adynamic states of inflammatory diseases; 2. The catarrhal state, with increased modified secretion; 3. The mucus flux, or chronic catarrh; 4. Excess of epithelium; 5. The acute inflammatory state; and, 6. The anemic state.

B. Changes in the bloodvessels of the alimentary canal, by which their power to absorb matters presented to them is diminished, as when the comparative density of the blood is lowered, its motion is impeded, or its alkalinity is lessened.

C. Changes in the mucus of the alimentary canal.

D. Changes in the water circulating through the mucous membrane.

E. Morbid effects of digestion traceable to nervous influence.

F. Morbid affections of the muscular coat of the alimentary canal interfering with its peristaltic action—it being too weak for its work, or its motion being arrested for a short distance by an organic change in the walls of the tube, or it being completely suspended by mental emotion.

G. Changes in the media of solution.

Notwithstanding the author has indulged in some pathological refinements that can be with difficulty appreciated at the bedside, still, from the remarks he has presented under the several heads just enumerated, many valuable practical hints may be acquired, of every-day applicability.

"The general indications of the deficiencies in the working order of the alimentary mucous membrane sketched out as above," Dr. C. observes, "may occur coincidentally with all kinds of anatomical lesions of the membrane itself, of the glands supplementary to it, or of distinct distant organs. They give hints how the diseases arising out of a compound of the phenomena of the local disorganizations with the general condition may be alleviated, and are therefore of value as introducing modifications of treatment. It is true, our choice of treatment must not be based on them alone; and sometimes the specially affected organ is of such importance that the general symptoms must be neglected for a time; but still they must never entirely be lost sight of."

The morbid states of the mouth and gullet affecting digestion are next considered—defective mastication, impediments to deglutition, and morbid states of the salivary secretion.

In this chapter, Dr. C. treats of heart-burn and waterbrash. As his views in relation to these affections differ considerably from those generally taught in the books, we present here the greater portion of his remarks in relation to their pathology:—

"Heart-burn consists of a painful sensation of heat running up in paroxysms from the pit of the stomach to the fauces. When the same sensation is accompanied by the ejection of a watery fluid, it is called *pyrosis*, or waterbrash.

"There is every reason to believe that the last-named liquid does not come, as used to be represented, from the stomach, but from the glands at the bottom of the œsophagus. For, in the first place, when thrown up without much effort, it is alkaline; and only when there is sufficient heaving to eject some of the contents of the stomach, does it present an acid reaction. Secondly, it exhibits in the microscope the same appearance as saliva, containing the scales of pavement epithelium which line the mouth and œsophagus. It possesses, too, the power of turning starch into sugar, and gives evidence of the presence of sulphocyanide of potassium by its reddening action on the proto-salts of iron. Now, the resemblance of the œsophageal cardiac glands to the salivary glands is stated to be very close, while the gastric glands are quite different, and, as it may reasonably be assumed from analogy, more likely that similar glands form similar secretions, than that diverse glands form similar secretions, the attribution of the fluid in question to the lower part of the gullet is an obvious conclusion.

"The probable *rationale* of its collection in the considerable amount which is thrown up in attacks of waterbrash, is this: that from some preternatural irritation of the stomach, such as the persistence of food in it, the collection of mucus, or morbid sensitiveness of the nerves, the same salivary secretion in the gullet which ordinarily accompanies meals continues afterwards, and is prevented from proceeding downwards by an irritated constriction of the muscular tube. After a time it is ejected, and the result is attained by that easy reversed action which is observed in the œsophagus, as distinguished from the severe strain of emptying the stomach by vomiting; and hence we have the easy eructation of mild fluid constituting an attack of the symptom in question." "The above explanation refers, in short, waterbrash to a spasm of the œsophagus detaining the saliva from proceeding into the stomach, which is enabled, during the absence of food, to collect that secretion in considerable quantities, and throw it up by a simple reversed muscular action.

"A morbid sensibility accompanying spasm, and running in the same direction, constitutes the *heart-burn* which occurs along with waterbrash. It must not, however, be supposed that it is any acrid, alkaline, or acid quality of the fluid ejected that causes the pain. A simple evidence of this is exhibited by getting the patient to swallow again the fluid which rises into the mouth. Of course, if it was capable of giving pain by its chemical constitution, it would do so in going down as well as in coming up. But nothing of the sort is experienced, and it excites as little discomfort as saliva in its downward course. Besides which, heart-burn occurs without waterbrash; indeed, it is by far most commonly dry, consisting only of a sensation like hot smoke rising in the throat, but bringing nothing up. In these cases, the most familiar ones to us all, either the spasm is not complete enough to stay the descent of the saliva, or not strong enough to bring it up, or that secretion has been exhausted by the recent digestion of a meal. Hence, heart-burn may be looked upon as the milder disease, of which waterbrash is the severer development. It occurs during the later periods of digestion as a consequence of overloading the stomach or eating improper food, even to moderately healthy persons, whereas pyrosis is confined to chronic invalids."

"The causes of heart-burn and pyrosis, though they are diseases of the œsophagus, do not lie *in* the œsophagus. Cancer, ulceration, or stricture of that organ, do not originate them in the majority of cases of these lesions, whereas they are a very common consequence of even slight morbid conditions of the whole stomach. It is to be remarked that they are easier produced by slight general states than by severe local states of the viscus. We constantly find cancerous tumours and considerable ulcerations in the gastric walls without any œsophageal symptoms at all; whereas a catarrh, a mucous flux, and more commonly still, simple atony of the stomach, seldom exist long without them. They are not, then, accompaniments of dangerous or fatal disorders, and for that reason may be said to have no morbid anatomy. We scarcely ever see the inside of an œsophagus that has suffered from them at any short period before death, except in cases of death by accident; for any distant severe malady seems to make all the minor evils.

"As they may be dependent upon one of several internal states, or upon several united, the external circumstances which lead to them are of course many and various. But the links in the causation of the immediate phenomena are so numerous, and the local gastric condition has usually lasted so long before they are produced, that it is difficult in most cases to make out a very consistent history."

"I think, however, it is of importance to distinguish the morbid conditions on which pyrosis and heart-burn depend, for the reason that they require different medicines and management. I wish this could be done with greater fulness, but yet the following aid to diagnosis may not be without its value. When they arise from the sour decay of the food, or simply from distension of the viscus arising in atony of the stomach, they occur three or four hours after a meal, and often bring up acid matter in the eructations; when dependent on mucous flux, they are most apt to come on in the morning before breakfast, and the ejected fluid is neutral or alkaline."

The next subject treated of is the disturbance of digestion resulting from acute and chronic morbid affections of the stomach, after which follows a consideration of the disorders of the small intestines interfering with digestion. Then the morbid states of the pancreas, and the pathological conditions of the liver as causes of disturbed digestion; finally, the disordered conditions of the colon affecting digestion, and giving rise to atonic constipation. The general subject of flatulence concludes the account of the disturbances of the digestive function, and the treatise concludes with a chapter on regimen, in which the author discusses briefly a few of the most important questions of dietetic and alterative medicine in reference to invalids.

From the foregoing brief notice of the general plan and subject-matter of the work before us, it will be seen that the author does not offer it as a treatise on the pathology and treatment of the diseases of the alimentary canal and its associated organs, but as one restricted to an investigation of the several derangements of the digestive functions—the diseased conditions of the organs concerned in the execution of these functions being noticed only so far as they explain the causes and phenomena of those derangements. Viewed in this light, the work is a highly instructive one, from which much valuable practical information may be obtained; it certainly demands a careful perusal, on the part of the physician. The pathological views of the author will be found to be, in general, well sustained, and to have, in those particulars in which they differ from commonly received opinions, the semblance, at least, of truth. The therapeutical directions of Dr. Chambers are simple and rational.

The chapter on regimen is replete with good sense. Many of the too common errors committed in reference to diet, especially in cases of chronic disease, by those in as well as out of the profession, are clearly pointed out. We are inclined even to admit all that the author teaches in relation to the uses of alcoholic drinks as a remedial agent, but must dissent from his special pleading in defence of their temperate habitual employment. We cannot admit with him that alcohol is, in health, an innocent stimulant, much less that, as he maintains, its use is necessary to sustain the health, intellectual vigour, and well-being of man, under any circumstances, short of certain conditions of adynamic disease, in which he may be placed.

With Dr. Chambers, the energy, vigour, intellectual powers, and happiness of a nation is mainly dependent upon their habitual use of alcoholic drinks; and to the want or relinquishment of these drinks he would attribute the decline and fall of empires—the moral and mental degradation of communities once distinguished for their political and intellectual greatness.

"The greater the perfection of the body," he remarks, "the better instrument the soul has to use, and physiology, experience, and everything else, show us that an animal attains the greatest perfection when it feels the least pain, and the greatest sum of total pleasure. That legislature, then, is truly patriotic which places within the reach of their countrymen the opportunity of gratifying the senses to the greatest possible amount without consequent pain. There is every reason to believe that by so doing they are making them bigger, stronger, braver, and more sensible. Although these physiologists should never be able to show that the gifts of Bacchus, or the 'cup which cheers but not inebriates,' the unaccountable quantity of salt which men and animals take when they can get it, and similar accessories, act as nourishment, though it should be proved that they *do not* act as nourishment, still we have a means of accounting for the indubitable fact that the opportunity for temperately enjoying them has always coincided with the advance of a nation in the scale of humanity. And that, on the other hand, some declines and falls have singularly accompanied the surrender of wholesome fermented liquids. Why were the Egyptians great when beer was the popular drink, and why have they become 'no nation' since it has ceased to be so? Is the degradation of Asia Minor and Arabia quite irrespective of the Moslem denial of wine to the best, that is, the conscientious citizens? There is reason to believe that an historian who would take up this subject, would be able to connect advance and retrogression more with the supply of superfluities than of pure necessaries; but, at the same time, it must be allowed that a Niebuhr is required to distinguish cause and effect in this physical, even more than in the political history of our species. When, then, a statesman is asked, 'Why will you not carry a Maine liquor law? Why will you not do all you can to put temptation out of the way of the intemperate?' he gives a sufficient answer when he says: 'Because liquor is nice (to some palates); and I will not deprive my *noblest* and *most cherished* countrymen, *the temperate man*, of a pleasure likely to make *him* stronger and happier."

In his zeal to promote the habitual use of alcoholic stimulants, Dr. C. denies that the moderate use of these stimulants ever endangers the creation of an inordinate and uncontrollable appetite for them, leading to habits of intemperance, with all their horrid accompaniments of physical degeneration and moral ruin. In reply to this strange assumption of the author, it is only necessary to point to the recorded experience of the whole human race, from the earliest periods to the present time, which proves incontestably that moderate indulgence in alcoholic liquors is especially liable to lead to their excessive use. Now, the lesson which experience teaches us cannot be overthrown by the mere assertion, that, provided an individual does not partake of intoxicating drinks too frequently, he will not indulge in them to excess; and to this, in fact, amounts the entire argument of Dr. C. in his defence of these drinks as a useful, if not indispensable accessory article of food. D. F. C.

ART. XVII.—*Practical Treatise on the Diseases of Children and Infants at the Breast, including the Hygiene and Physical Education of Young Children.* Translated from the French of M. BOUCHUT, with Notes and Additions by PETER HINCKES BIRD, F. R. C. S., author of the Jacksonian Prize Essay for 1849, *On Erysipelas.* 8vo. pp. 776. London, 1855.

THE treatise of M. Bouchut is unquestionably a very able one, presenting a full and generally accurate exposition of the characteristics, pathology, and treatment of nearly every disease and accident, surgical as well as medical, incident to the period of life from birth to the termination of childhood. The treatise, independent of its value otherwise, is especially interesting from the fact of its embodying the views, pathological and therapeutical, of Professor Trousseau, in reference to the several diseases of which it treats.

The first part of the treatise is devoted to a consideration of the hygiene and physical education of young children. These subjects are treated with great ability, and especially that portion of the hygiene of infancy which relates to lactation by the mother and nurse; in connection with which is fully discussed the important question of the influence which the condition, temperament, and anterior or actual diseases of the nurse is capable of exerting upon the health of those who derive from her their nutriment.

As a large number of the diseases to which young children are liable may with more certainty be prevented by a correct system of prophylaxis than almost any of those which occur in after life, the subject of infantile hygiene and management is one of deep importance, though too much neglected, and, we fear, to a certain extent, misunderstood by medical men generally. We hold that no general systematic treatise on the diseases of children can be considered complete of which it does not form a prominent feature. In the four chapters devoted to the subject in the treatise before us, the directions of the author for the hygienic treatment of the infant from birth to the termination of the nursery age, are, in their general outlines and most of their details, particularly sound and practical. On one or two points, we should be inclined to differ from him—more frequently, however, our own experience very fully corroborates the excellency and propriety of the views and precepts he has advanced. With M. Bouchut—

"We are astonished at not observing the art of bringing up children cultivated in a special manner, similar to that of rearing domestic animals. We are, moreover, surprised at finding how little is known concerning the hygiene of infants, and how much the precepts relating to their education are neglected by medical men, who, in this respect, are less informed than a great number of mothers of families, or of nurses.

"The physical education of children is, then, a most interesting subject of study to the medical man. From the cradle man must be taken in order to make him a robust and vigorous citizen, and to modify his constitution, if, perchance, it is vitiated in its origin. It is during infancy, especially, that strict attention to the laws of hygiene is necessary, whether it be to preserve the health or to re-establish it when disease has interrupted its course. The knowledge of these laws is the more important, inasmuch as we have often to contend against established errors in the method of bringing up children. How can we successfully accomplish this, if we do not possess a profound knowledge of the subject under consideration? The study, moreover, is necessary to the medical treatment of children, which, in many cases, depends almost entirely on their physical education. It is often sufficient to regulate the regimen, or to prescribe the observance of certain laws of hygiene, to cause some morbid symptoms to disappear, which we should treat in vain by the use of therapeutic means. Thus, more than once, by properly regulating the hours of lactation in young children, I have caused the cessation of the vomitings, and the green diarrhœa, which resulted from a too abundant alimentation, and from the breast being given too frequently. It is in consequence of an improper regimen that the nutrition of some children is so altered that their bones soften and they become ricketty. In many circumstances, analogous influences act in the same manner in the production of other diseases."

The second part of M. Bouchut's treatise comprises the general pathology of infancy, the external characteristics of infantile disease, and the study of the physiognomy, gesture, cry, etc., for the diagnosis of these diseases. Though concise, the teachings of the author in reference to these subjects are interesting and instructive. The very necessity of treating the diseases of children apart from those of the adult is founded in the fact of the very marked difference in their character, and in the symptomatology by which their presence is indicated, and their seat and pathological nature are to be determined.

"The infant," as M. Bouchut very correctly remarks, "receives with life a sort of existence which constitutes its physiological individuality or idiosyncrasy, which depends at the same time upon the climate, the age, and constitution of its parents, their moral disposition, their diseases, etc.; it controls, from the cradle, certain unknown predisposing causes, which may induce, at a later period, a great number of diseases, such as syphilis, scrofula, gout, epilepsia, mania, &c. By virtue of this puerile idiosyncrasy, it can prevent some of these diseases up to the age of twenty, thirty, or forty years. There are others which it cannot keep in the latent state longer than five or six years; these are scrofula and epilepsy. But there is one—syphilis, which, in its hereditary form, appears, at the latest, six weeks or two months after birth. There are some diseases peculiar to infancy, and others which are common to this age, and to every other period of life. The former, such as ophthalmia, convulsions, croup, and certain diseases of the intestines, have their own special characters, which must be individually studied if we wish not to mistake them; the others, which appear at the same time in the infant and adult, present, on comparison, a specially modified form, which establishes a marked difference between them. This modification principally relates to the lesions and the degree of reaction which they determine—that is to say, the symptoms; so that, in a great number of cases, the knowledge of the diseases of the adult would be of no avail in regard to the same diseases in infants, if a comparative study of them had been made. Thus, to cite one example only, nothing is more easy to recognize than confirmed pulmonary phthisis in the adult, whilst in the infant there is nothing which presents more difficulty. This is also the case with a great many other diseases."

The third part of the treatise is devoted to the description, pathology, and treatment of the diseases of infancy and childhood, including the principal surgical maladies and accidents incident to this period of life. These are arranged according to the organs primarily or chiefly affected.

From the twenty-six sections, or books, into which this portion of the treatise is divided, much valuable information may be obtained in relation to the character, phenomena, progress, and general management of the diseases of the earlier periods of existence. In the majority of cases, the views advanced by the author will be found to correspond with those entertained by the most authoritative writers of the day, and to present a very fair exposition of the present state of our knowledge in respect to the particular diseases to which they refer. In a few instances, however, the pathological teachings of the author can scarcely be considered as in accordance with received facts and observations, or his therapeutical directions to comport with the experience of American practitioners at least.

Thus, in relation to the pathology of cyanosis, M. Bouchut contents himself with the bare statement that the disease always results from obstruction to the venous circulation, and the admixture of arterial and venous blood, caused by various organic alterations of the heart, or, more usually, only by a communication of the auricles by the foramen ovale, or a communication of the ventricles. The entire series of modern observations and deductions, pointing to the true character of cyanosis, are entirely overlooked. As these observations and deductions are now admitted as true by the most authoritative of contemporary pathologists, some notice of them was to be expected in a systematic treatise on the maladies of infancy.

A very useful feature in the work before us is the following the chapter, which treats of any important disease, by a series of aphorisms, in which the prominent facts laid down in reference to its pathology and treatment are concisely set forth.

We here present some of these aphorisms, which will give to our readers some idea of the pathological and therapeutical views inculcated by the author.

The following are in reference to eclampsia, or convulsions in infants:—

"1. In early childhood, hallucinations and eclampsia replace delirium.

"2. In young children, the hallucination is characterized by movements of fear, and by gestures which seem to drive away or attract the object of prepossession.

"3. Eclampsia results from a direct or sympathetic, primary or consecutive, disturbance of the nervous functions.

"4. Eclampsia may be present without any material or appreciable lesion of the nervous system.

"5. Eclampsia is generally hereditary.

"6. A first attack of eclampsia predisposes to a second.

"7. A sudden and rapid convulsion, unattended by fever, is not at all dangerous.

"8. The eclampsia which attacks early infancy, and which continues to the period of childhood, becomes changed into epilepsy.

"9. Eclampsia causes partial paralysis, and these produce deformities.

"10. Sudden, violent convulsions, followed by a prolonged drowsiness, but without fever, are indicative of epilepsy.

"11. A sudden and violent convulsion, followed by fever, is always symptomatic of the incubation of an eruptive fever, or of a visceral inflammation, and announces great danger.

"12. Convulsions at the commencement of smallpox are of good augury for the favourable termination of the disease.

"13. The convulsions which terminate an acute or chronic visceral disease are nearly always symptomatic of a consecutive lesion of the brain and of the meninges.

"14. The convulsions which accompany an acute disease are very serious.

"15. The convulsions which appear as complications of pneumonia are fatal.

"16. Fresh air, cold, and the sprinkling of the face with cold water, are sufficient to ward off an attack of convulsions; but when once it has commenced, they do not arrest it.

"17. Those who pretend to cut short an attack of convulsions by the aid of medicines, resemble those who shake an hour-glass in order to hasten the invariable and regular progress of the sand it encloses.

"18. The cause of the eclampsia must be especially ascertained, in order to prevent its return."

The following are appended to the chapter on granular meningitis:—

"1. Granular meningitis is peculiar to early childhood.

"2. Granular meningitis is always developed amongst scrofulous and tubercular children, or the issue of parents themselves tainted with tubercles or scrofula.

"3. Granular meningitis announces itself, a very long time in advance, by intermitting phenomena, which are—want of appetite, fits of sadness or of anger, depression, fright, and nocturnal hallucinations.

"4. Vomitings, constipation, and a considerable fever, combined with a short, incomplete, intermitting, and *sighing* respiration, announce an attack of meningitis.

"5. Sudden reddening of the countenance, and its consecutive discoloration, alternating in short intervals during the fever, are the forerunners of convulsions.

"6. The extreme sensibility of the eyes to light, and the permanent closure of the eyelids, without ophthalmia, in a child labouring under fever, are signs of meningitis.

"7. Granular meningitis, accompanied by sharp cries, or by convulsions, is almost invariably fatal."

The following are M. Bouchut's aphorisms in relation to membranous and false croup, or stridulous laryngitis:—

"1. Croup exists from the time that false fibrous membranes are developed on the mucous membrane of the larynx.

"2. A smothered, hoarse, dull cough, followed by a metallic hissing, and accompanied by fever and anhelation, reveal the presence of croup.

"3. In croup, extinguished cough and voice, together with noisy, rough, serratic respiration, announce the approach of asphyxia and death.

"4. Croup advanced to the stage of the fits of suffocation is fatal.

"5. There are some cases of croup which may get well, and others which are cured.

"6. Croup should be treated by repeated emetics, alternating with doses of calomel.

"7. Croup, arrived at the period of the fits of suffocation, where death appears imminent, should at once be treated by tracheotomy.

"8. A sudden nocturnal attack of suffocation, accompanied by a dry, hoarse, hissing, and sonorous cough, announces *false* croup.

"9. False croup, very violent at its commencement, diminishes in a few hours, whereas true croup advances without intermission, daily increasing in intensity.

"10. Two or three fits of suffocation, less and less severe, with an interval of twenty-four hours, characterize false croup.

"11. False croup is very readily cured by the administration of an emetic."

Did we feel disposed to enter upon a formal criticism of the chapters to which the foregoing series of aphorisms appertain, we should be disposed to call in question the strict accuracy of more than one of them. But, although we are obliged to dissent from a few of the pathological and many of the therapeutical teachings of M. Bouchut, we can very confidently recommend his treatise as a valuable exponent of the hygiene, pathology, and therapeutics of infancy and childhood; and we are gratified that, through the present English translation, it has been rendered accessible to the profession of this country generally. Dr. Bird has not only succeeded in presenting a very good rendering of the original, but has materially enhanced the value of the work by the notes and the additions he has made to it, embracing the views of various recent continental and English writers, especially of the later German writers, by whose accurate and extended observations our knowledge of infantile pathology has been greatly enhanced. D. F. C.

Art. XVIII.—*Anales de la Sociedad de Medicina de Montevideo. Desde Setiembre de* 1854 *hasta Mayo de* 1855. *Numeros* 5. 8vo. 178 pp.

Annals of the Medical Society of Montevideo; from September, 1854, to May, 1855, inclusive. Five numbers.

These Annals constitute a most interesting medical periodical, published at Montevideo, every two months, in numbers containing, upon an average, thirty-six pages each. They cannot fail to exert a beneficial influence upon the profession in that part of South America.

By a resolution of the Montevidean Medical Society, this periodical is made the organ of publication of the proceedings at its sessions, and of the various communications and reports presented by its members. Besides the original matter contained in each number, there is furnished, under the head of a "review of foreign periodicals," a brief notice of some of the more important of the recent contributions to medical science, which, meagre as it is, must be valuable to the readers of the Annals, upon the majority of whom the pages of the medical journals of Europe and the United States are most effectually closed.

From a short, but very neat address, delivered at the opening of the anniversary session of the Medical Society of Montevideo, November, 1854, by its President, Dr. Fermin Ferreira, we learn that its members are fully alive to the importance of organization for the improvement of the education and *morale* of the profession, and for the defence and maintenance of its rights and interests; while a report of the proceedings of the Society anterior to the period just indicated, made by the secretary, Dr. D. Enrique Muñoz, shows that the members have been actively employed in the investigation of the medical topography, the meteorology, and the endemic and epidemic diseases of Montevideo and its environs. The protection afforded by vaccination, the means calculated to insure its effectual performance and general extension; the question of revaccination; the contagious or noncontagious character of certain diseases of frequent or occasional occurrence, including yellow fever, and involving the question of quarantine; public hygiene, especially in relation to the regulation of interments, have each received that attention from the Society that their importance merits; while the numerous interesting and instructive cases reported at the sessions of the Society, show that whatever may have been formerly the lack of medical acquirements and skill of the physicians of Montevideo, they present now, certainly, many claims upon our respect, as well for their professional attainments, as for the zeal and assiduity they evince in the cultivation of the field of inquiry within their reach, and their laudable desire to contribute their quota towards the improvement and enlargement of medical knowledge.

Among the several excellent communications contained in the numbers of the Annals before us, we would note particularly a paper on "the meteorological and medical constitution, and the prevailing diseases and mortality of Montevideo for the year 1853," by Dr. Martin de Moussy, police physician.

The work is well printed, and neatly got up. From its future numbers, we hope to derive many important items to enrich our quarterly summary of the improvements and discoveries in the several departments of medical science.

D. F. C.

Art. XIX.—*Army Meteorological Register, for twelve years, from* 1843 *to* 1854, *inclusive.* Compiled from observations made by the officers of the Medical Department of the Army, at the Military Posts of the United States. Prepared under the direction of Brevet Brigadier-General Thomas Lawson, Surgeon-General United States Army. Published by authority of Hon. Jefferson Davis, Secretary of War. Washington, 1855. Fol., pp. 763.

In the year 1818, Congress, at the recommendation of the late Hon. John C. Calhoun, then Secretary of War, performed an act which, at the present day, when its advantageous results can be fully estimated, reflects upon both the highest honour. This was the creation of the office of Surgeon-General of the Army, of which post Dr. Lovell was the first incumbent. Soon after his appointment, Surgeon-General Lovell prepared and submitted to the Secretary of War, for his approval, a system of regulations for the government of the Medical Department, including, among the duties of the surgeon, that of keeping a diary of the weather, and of noting everything of importance relating to the medical topography of his station, the climate, diseases, &c., and of transmitting quarterly reports of these observations to the Medical Bureau at Washington. The earliest registers reported in accordance with this regulation, and on file in the Surgeon-General's office, are dated January, 1819. The only instruments used at first were a thermometer and vane; and the observations were confined to the temperature of the air and the course of the winds, with general notices of the weather. The thermometer was noted at 7 A. M., 2 P. M., and 9 P. M., and the winds and weather in the morning, noon, and evening. Early in the year 1836, a rain gauge was furnished to each post. No change was made in the hours of observation until January, 1841, when "sunrise" was substituted for 7 A. M.; and in 1842 the number of daily observations were increased to four. The results of the observations for 1820 and 1821 were published at the end of each year. Subsequent observations have been published in a series of army meteorological registers, of which the first volume, embracing the years from 1822 to 1825, inclusive, was issued by Surgeon-General Lovell in 1826. The second and third volumes of the series, comprising respectively the years from 1826 to 1830, and from 1831 to 1842, inclusive, were prepared and published, the former in 1840, and the latter in 1851, under the direction of the present Surgeon-General, Dr. Thomas Lawson, who succeeded Dr. Lovell in October 1836.

The present imposing quarto volume, with its numerous charts, is a proud monument to the intelligence of the projectors of the system of extensive meteorological observations over the North American Continent, and, at the same time, a striking proof of the faithful performance of arduous duties assigned to the officers of the medical staff scattered at the different stations and most distant outposts in the country. A former publication, duly noticed in this journal, brought the meteorological records collected by the medical bureau from its establishment in 1821 to 1842, inclusive. Since the last-named year, a new and improved system of observations has been pursued, and the materials collected have been so abundant that it was found necessary to confine the present publication to records of the thermometer, direction and force of the winds, clearness of the sky, and fall of rain and snow. The value of these several observations is immensely enhanced by the isothermal and rain charts designed and prepared exclusively by Lorin Blodget, Esq., who was associated in the other labours connected with this work. The map, serving as a basis for these charts, was carefully drawn under the direction of Dr. Richard H. Coolidge, Assistant Surgeon-General of the United States Army, charged with that portion of the business of the medical bureau which relates to meteorology, and the statistics of sickness and mortality in the army. In the consolidated temperature and rain tables furnished, the former exhibit records since 1822, and the latter all measurements of rain made since 1836. The construction of these tables has cost immense labour, a large amount of which was spent in the investigations necessary for determining the precise geographical position and altitudes above the sea of the numerous interior stations. Some idea of this herculean task may perhaps be formed from a knowledge of the facts that the preparation of this work has required the careful and minute examination and computation of over eight thousand monthly registers, containing an aggregate of nearly four millions of observations. Those only who have had experience in meteorological and statistical investigations can duly estimate the amount and intrinsic value of such extensive, exact records and tabular statements. The casual reader, who runs his eye so readily along the regular lines of the monthly tables, little thinks that each line presents the results of no less than four hundred and eighty separate observations, exclusive of those recording the precipitations of rain and snow, with fair and cloudy days. The work, thus prepared in accordance with instructions from the Surgeon-General of the Army, Dr. T. Lawson, reflects the highest honour upon the medical staff, whose services have everywhere been put in requisition, and especially upon Dr. Coolidge, the assistant surgeon-general, charged with the immediate supervision of the collation, tabulation, and publication of the vast amount of meteorological materials.

In ascertaining the *mean* temperature of the day, it was formerly the custom to determine this by observations taken at sunrise for the minimum, and three o'clock P. M. for the maximum. But it having been demonstrated that the results thus obtained were not in accordance with those accurately derived from hourly observations, the mode now pursued is to depend for the mean upon four daily observations, the first of which is made a little before sunrise, the second at 9 o'clock A. M., the third at 3 o'clock P. M., and the fourth at 9 o'clock P. M. Every one who has given attention to thermometrical observations must have noticed the variations often existing in the graduation of different instruments. Some of these may be found marking the same temperature at one part of the scale, but differing when the mercury is ranging over other points. Hence the judicious course pursued in the public service for the last twelve years, of having the instruments all graduated so as to correspond with the standard thermometer of the National Observatory, the comparisons with which are made so as to correspond at four points, namely, 32°, 52°, 72°, and 92°. The fact that prior to 1843 the thermometers used were not so uniformly graduated must be borne in mind by those who may be induced to make any accurate researches based upon the results furnished by them.

In his introduction, Dr. Coolidge observes:—

"The army system of meteorological observations was intended to be primarily subservient to the advancement of medical science, and secondarily to that of meteorology as a distinct branch of physics. The relations of atmospheric phenomena to disease have been to some extent considered in a "Statistical Report on the Sickness and Mortality in the Army of the United States," prepared under the direction of the Surgeon-General, and published in 1840; and it is proposed still further to discuss those relations in a similar report now in course of preparation. The Department has heretofore, however, made no attempt to deduce general scientific results from the mass of material it has accumulated. Its position in regard to the science of meteorology was that of a collector of facts carefully observed; and the results of the labours of the medical officers have been from time to time given to the public, in the hope that, in the hands of those who were specially devoted to such investigations, they would aid in establishing or refuting some of the interesting theories of this science, and, taken in connection with other data, perhaps lead to the discovery of definite laws.

"Within a few years past, some portions of the army records have been used in connection with certain scientific inquiries and investigations; but no effort has been made to deduce therefrom general results. It was to such results that the medical officers looked forward as the reward of their labours. For thirty-six years they had patiently observed and recorded facts in meteorology. In that time, the army stations had gradually extended from the Atlantic to the Pacific coast, and from the forty-seventh parallel of north latitude to the banks of the Rio Grande. The establishment of a new military post and the commencement of observations thereat were almost uniformly simultaneous: and the number of registers forwarded from the cities of Mexico during their temporary occupation by the troops of the United States attest that the excitements of war were not sufficient to render the medical officers forgetful of the interests of this science.

"The present volume, the fourth in the series of registers issued from the surgeon-general's office, has been prepared with a view to meet, in part at least, these just expectations. It contains the results of the observations of the thermometer, direction and force of winds, clearness of sky, and fall of rain and snow, during a period of twelve years—from the first day of January, 1843, to January, 1855—arranged in monthly tables and annual summaries. To these have been added consolidated temperature and rain tables for each separate station, comprising the results of all the thermometric observations made by medical officers since 1822, and of all measurements of rain and snow since the introduction of the rain gauge in 1836.

"The geographical position and altitude above the sea of each station, as given in this volume, have been determined with great exactness. This, together with the brief topographical description of each military post, materially enhances the value of the work as a book of reference.

"The feature which distinguishes this register from its predecessors is the charts of distribution of temperature and of rain with which it is illustrated, and which have been prepared exclusively from data in the surgeon-general's office. The principles upon which these charts have been constructed, and the general results they are intended to exhibit, are fully explained in the accompanying report.

"It was intended to give the observations on the 'direction and velocity of the clouds' in this edition; but, finding that they could not be included without a material modification of the tables, and a great increase in the size of the book, the idea was reluctantly abandoned.

"The system of 'wet bulb' observations adopted in 1843, with the view of ascertaining the relative humidity of the air, was discontinued in 1849, having failed to give satisfactory results. The directions were to wet the gauze-covered bulb of a thermometer, and to 'swing the instrument in the open air in the shade until the mercury sinks as low as it will.' The time required to insure the full effect of evaporation by this process varies from ten minutes to half an hour, according to the temperature of the air. The instrument was, therefore, not adapted to the military service, the time required for a single observation being more than the medical officers could always command. To supply this deficiency, the department is now distributing to the military stations a hygrometer, consisting essentially of a thermometer, the bulb of which is covered with floss silk, inclosed in a piece of thin muslin, the ends of the silk sufficiently long to dip into water contained in a brass reservoir secured immediately below the bulb. In the top of this reservoir is a small opening to admit the silk, and to the front is attached a cylinder communicating with the interior by a small hole. This instrument can be observed with the same ease as an ordinary thermometer, the directions being to keep the reservoir supplied with rain or distilled water, and, in freezing weather, when the bulb is not wet by capillary absorption, to moisten the gauze about fifteen or twenty minutes before making the observation.

"Observations on the barometer and attached thermometer have been made at fifty-one stations for various periods during the last twelve years; these, together with the 'hourly observations' at the equinoxes and solstices, remain on file in the medical bureau, and will afford ample material for another volume."

It is impossible to over-estimate the value of the data furnished in the various reports that have emanated from the Medical Bureau of the United States Army, which must serve in all time to come as sources of exact information to those who pursue inquiries connected with the climatology of our continent. Even those who may be led to look through the volume with no other motive than the indulgence of common curiosity cannot fail to trace with interest the figures, lines, and shadings which point out the varying temperatures of spring, summer, autumn, and winter, in the different localities of our great domain, with the proportions of the aqueous precipitations in the various months, in some places profuse, and in others scanty or almost entirely wanting. The effects of mountain elevations, and the presence of seas and lakes, upon climate, and especially the modifying influences existing along the Atlantic and Pacific coasts, cannot fail to make a striking impression. G. E.

Art. XX.—*Reports of the Provincial Lunatic Asylum of New Brunswick, for the years* 1850, 1851, 1852, and 1853.

We have received the reports by Dr. John Waddell, of the Asylum at St. Johns, New Brunswick, for the four years ending with 1853. We cannot learn from them the time at which the institution was opened, but in the report for 1850 it is stated that the average number of patients treated in each year, for the five preceding years, was 140.2. The plan of the buildings was taken from that of the Butler Hospital, at Providence, R. I.; but the central buildings and one lodge alone were erected previously to 1853. In that year, one wing, the department for men, was nearly completed.

	Men.	Women.	Total.
Patients in the asylum, Dec. 31, 1849	44	48	92
Admitted in the course of four years	201	105	306
Whole number	245	153	398
Discharged, including deaths	175	96	271
Remaining, Dec. 31, 1853	70	57	127
Of those discharged there were cured	94	41	135
Died	31	26	57

The admissions in each of the four years, successively, were 59, 67, 88, and 92.

Dr. Waddell complains of the want of a chapel, of halls for social gatherings, and other facilities for moral treatment. "Mechanical restraint," he remarks, "we have, as far as possible, abandoned. There do, however, occur cases when it is necessary to resort to it; and in such cases its use may be considered as kindness." The topics of professional interest discussed in these reports have already been presented to our readers in the notices of the reports from the institutions in the United States. P. E.

Art. XXI.—*Manual of Chemical Physiology.* From the German of Prof. C. G. Lehmann, M. D. Translated, with notes and additions, by J. Cheston Morris, M. D. With an Introductory Essay on Vital Force, by Samuel Jackson, M. D., Professor of Institutes of Medicine, in the University of Pennsylvania. Illustrated with forty wood-cuts. Philadelphia: Blanchard and Lea, 1856. 8vo. pp. 331.

Prof. Lehmann's manual came into our hands at too late a period to allow us to do much more than announce its publication. This, however, is the less to be regretted, as we have given in a previous part of this number a review of the large work on Physiological Chemistry by the same author. The present volume, we may observe, will be a very convenient one for students, as offering a brief epitome of the more elaborate work, and as containing in a very condensed form, the positive facts of physiological chemistry. It, in addition, possesses an especial value from being enriched by an exceedingly interesting introductory essay "On the Human Organism and its Forces, with Remarks on Prof. Lehmann's Doctrine of Vital Forces," by the eminent Professor of the Institutes of Medicine, in the University of Pennsylvania, Dr. S. Jackson; and also from some interesting extracts from the lectures of the same gentleman, introduced in the appendix.

We need only add that the value of Dr. Lehmann's researches, and the great weight of his authority have been fully recognized by Prof. Jackson, by his adopting the present volume as a text-book for his students, and by his recommending the original work on *Physiological Chemistry* for their more mature studies.

QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES

IN THE

MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

1. *Physiology of the Spinal Cord.*—The prize of experimental physiology, for the year 1855, has been awarded by the French Academy of Sciences to M. Brown-Sequard. This award was unanimously recommended by the distinguished committee, consisting of MM. Flourens, Serres, Rayer, Magendie, and Cl. Bernard, to which the memoir of M. Brown-Séquard was referred. The following report, drawn up by M. Cl. Bernard, gives the fullest account we have met with of the results of M. Brown-Séquard's researches:—

It was suspected, at a very early period, by physiologists and physicians, that the different vital phenomena due to the nervous system, and especially, those of sensibility and motion, had distinct organs for their transmission. It is to modern physiology, which has carried so far experimental analysis into the functions of the nerves, that the credit is due of having made the important discovery, and established, by incontrovertible evidence, that the anterior roots of the spinal marrow are the motor nerves, and the posterior roots the nerves of sensation. Or, in other words, that when a voluntary movement takes place, in one of the limbs for example, the motive influence originating in the encephalic centre of the spinal marrow can be transmitted to the proper muscles only by the anterior spinal roots; and that when a sensitive impression is conveyed in the opposite direction, from the periphery of the body to the nervous centres, this can be transmitted to the spinal marrow, and from thence to the encephalon, only by the posterior spinal roots.

While all physiologists are now agreed as to the manner in which the motive and sensitive functions are localized in respect to the spinal nerves, it is not so as to the spinal marrow itself. Are sensation and movement propagated within the spinal marrow by distinct portions of the cord? And if so, which are the portions which transmit the motive influence and which the sensitive impressions? The solution of these important questions has been attempted by the most skilful experimenters, but they still remain undecided. On the one hand, it is contended that the white matter of the cord is unadapted to transmit either sensation or motion, and that the gray matter is alone endowed with this double function, or partakes of it with the white portion. On the other hand, it is maintained that the white matter of the cord is the sole conducting medium, it being supposed, as an established fact, that the posterior fasciculi, which are in connection with the posterior spinal roots, are the exclusive conductors of sensitive impressions, while the antero-lateral fasciculi which are contiguous to the anterior spinal roots are the organs for the transmission of motion. And, it may be remarked, this last opinion is that which has been most generally adopted, at least in France.

M. Brown-Séquard has recently examined anew this difficult question of the transmission of sensitive impressions and motion in the spinal marrow, and the better to limit his subject, he has divided the problem into two; occupying himself, at first, with the determination of the parts of the cord by which sensitive impressions are transmitted from the posterior roots to the encephalic centre. It is, therefore, exclusively to the transmission of sensitive impressions in the spinal marrow that the present researches of M. Brown-Séquard, as well as the experiments performed by that learned physiologist before the commission are confined.

The first proposition that he would establish, is that the posterior fasciculi of the spinal marrow are not, as has been asserted, the exclusive agents for the transmission of sensitive impressions. To prove this, M. Brown-Séquard has performed two leading experiments.

The first experiment consists in cutting through, in a living animal, the posterior fasciculi of the spinal marrow on a level with the dorsal region. When, after this division, we pinch the posterior limbs of the animal, it feels it perfectly, and manifests immediately by its cries the pain it experiences. This result shows evidently that the posterior fasciculi of the cord are not exclusively charged with the transmission of sensibility, inasmuch as the sensitive or painful impression excited in the posterior limbs is transmitted to the brain, after the complete division of the fasciculi above the origin of the nerves of the posterior limbs, and consequently, at a point between the nerve, the pinching of which has caused the sensation of pain, and the brain where that sensation arrives to be appreciated.

Another most interesting phenomenon which has been discovered by M. Brown-Séquard, is that if, in this experiment, we pinch or irritate the posterior fasciculi of the cord at the part where they have been divided, we not only perceive that the two divided surfaces of the fasciculi are sensible, but we usually observe that the inferior or caudal end is more sensible than the superior or cephalic end, which alone remains in direct continuity with the encephalon.

It is unnecessary to remark that this new fact is, also, in opposition to the theory of the exclusive transmission of sensibility by the posterior fasciculi. According to this theory, the same effect should occur after the division of the posterior fasciculi, as after the section of the posterior spinal roots—namely, the end which remains in direct continuity with the encephalic centre should alone remain sensible, while the peripheral end should become completely insensible.

The second experiment of M. Brown-Séquard is in some degree the counter proof of the first.

We have just seen that the posterior fasciculi of the cord have been divided, in order to show that, without their intervention, sensitive impresssons may be transmitted to the brain by other portions of the spinal marrow that remain intact. It can still further be shown, that by the posterior fasciculi alone, when the other portions of the spinal marrow have been divided, the transmission of sensitive impressions cannot take place. This experiment has been performed by M. Brown-Séquard. He divided, upon a living animal, on a level with nearly the second dorsal vertebra, all the spinal marrow, with the exception of the posterior fasciculi. Immediately after this division was made, the posterior limbs of the animal became completely paralyzed, and when they were pinched no sensation was excited; that is to say, the transmission of sensitive impressions did not take place, notwithstanding the posterior fasciculi remained intact.

These two experiments, therefore, logically enchain themselves to prove that the posterior fasciculi are not the organs by which sensitive impressions are transmitted in the spinal marrow. The experiments were repeated before the Commission by M. Brown-Séquard, with great skill, upon animals in which the spinal cord was not exposed but for a very limited extent, and so as not to cause debility from hemorrhage, and to obtain the most conclusive results.

M. Brown-Séquard in his memoir examines afterwards the rôle of the gray substance, as well as the anterior and lateral cords of the spinal marrow, relative to the transmission of sensitive impressions. He has performed a number of experiments, in which he has treated the anterior and lateral cords in the same manner as he had the posterior cords, and has arrived at precisely analogous results. M. Brown-Séquard has seen, in effect, that after the section of the posterior cords, of the lateral cords, and of the anterior cords of the spinal marrow, sensitive impressions can yet be experienced, while, when the gray matter is destroyed, the transmission of sensitive impressions immediately ceases, even when the greater portion of the medullary fasciculi is allowed to remain as much as possible undisturbed. By all these numerous researches, M. Brown-Séquard has been led to the conclusion, that no portion of the white matter of the spinal marrow possesses the function of transmitting sensitive impressions to the centre of perception, but that this transition is effected by the gray medullary matter, especially its central portion. These results are of great interest in the physiology of the nervous centres, inasmuch as they show that insensible parts, as the gray matter of the spinal cord, are able to transmit sensitive impressions, while parts endowed with great sensibility, as the posterior fasciculi of the cord, do not transmit them.

In the second part of his memoir, M. Brown-Séquard has endeavoured to determine, experimentally, how the sensitive fibres of the posterior spinal roots, which convey sensitive impressions from the periphery, penetrate the spinal marrow in order to reach the gray matter. Supporting himself, on the one hand, upon the microscopic anatomy of the cord, and, on the other hand, upon ingeniously devised physiological experiments, he has been led to the enunciation of new views, in respect to the manner in which sensations are propagated to the central gray matter of the spinal marrow—which views he has detailed in his memoir, and which prove that this phenomenon is more complicated than we should be disposed to consider it on first view.

To conclude, the experiments of M. Brown-Séquard have thrown light upon one of the most important and difficult questions connected with the physiology of the spinal marrow—that relative to the transmission of sensitive impressions by this portion of the cerebro-spinal axis. If some facts in relation to the subject were already known, M. Brown-Séquard has added to these many additional ones. He has varied his experiments, and has so arranged the results of these as to resolve, in a very satisfactory manner, the question which was the subject of his researches. The Commission have consequently unanimously awarded to him the prize for experimental physiology, for the year 1855.—*Moniteur des Hôpitaux*, Feb. 5, 1856.

2. *Experimental Researches upon the Production of a Convulsive Affection of an Epileptic Character consequent upon Lesions of the Spinal Marrow.*—At a meeting of the French Academy of Sciences, held January 14th, 1856, M. Brown-Sequard read a memoir, the *résumé* of which he gives as follows:—

In 1850, I had found that, in the mammifera, certain lesions of the spinal marrow are followed, at the end of some weeks, by an epileptiform convulsive affection. Since then, I have performed a large number of experiments, in reference to this subject, from which the principal results I have obtained are as follows:—

I. I have found that all the following lesions may produce the convulsive affection alluded to: 1. A tranverse section complete, or nearly so, of a lateral half of the spinal marrow. 2. A transverse section, simultaneously, of the posterior fasciculi, of the posterior gray cornua, and of a part of the lateral fasciculi. 3. A transverse section of the posterior fasciculi alone. 4. A transverse section of the lateral fasciculi. 5. A transverse section of the anterior fasciculi. 6. A transverse section of the entire cord at the dorsal or lumbar region. 7. Puncture of the spinal marrow. Of all these lesions, those the most effectual in the production of the convulsive affection under consideration are the first and second. The first especially, a section of a lateral half of the cord, produced constantly the convulsive attack on such animals as survived the operation over three or four weeks. The intensity and frequency of the convulsive attacks produced by this lesion are much greater than those from any other lesion of the cord.

II. Of all that portion of the cord which lies between its caudal extremity and the middle of the dorsal region, it is the part comprised between the seventh or eighth dorsal and the third lumbar vertebræ, of which the lesions produce most frequently convulsive attacks. Beyond this part of the cord, lesions appear to diminish in their liability to produce convulsions in proportion as they are inflicted nearer to the caudal extremity or the nervous centre.

III. The period of the occurrence of the convulsions is almost always in the third week after the lesion is inflicted. In some cases, I have seen the first attack occur towards the close of the first week.

IV. The parts of the body convulsed vary with the seat of the lesion. When this occurs on a level with the last dorsal or first lumbar vertebra, and consists in the section of a lateral half of the cord, the convulsions occur in all parts of the body excepting the posterior limb on the side upon which the section has been practised. If the lesion consists in a section of the two posterior fasciculi, the convulsions are universal. If the lesion consists in a section of either the anterior fasciculi, the lateral fasciculi, or the entire cord, convulsions usually occur only in the non-paralyzed muscles. Sometimes, however, the paralyzed muscles are also convulsed; but in these it is a tonic spasm that occurs, and not the clonic convulsions observed in those not paralyzed.

V. In some cases, the convulsions occur without external excitation, but in general they are very readily induced by the latter. There is but one portion of the body the irritation of which will bring on an attack. This portion is one side of the face when but one lateral half of the cord is implicated in the lesion, but when the two lateral halves of the cord are divided, an irritation of both sides of the face is necessary to produce the convulsive attack. It is very remarkable, that when the lesion is of the right side of the cord, it is only an irritation inflicted upon the right side of the face that will induce convulsions, and only irritations of the left side of the face that will thus act when it is the left half of the cord that has been divided. The degree of irritation necessary to induce convulsions varies greatly; sometimes it is sufficient to blow lightly upon the face, or to touch it as lightly as possible; at other times, it is necessary to pinch very forcibly the face, to burn or to galvanize it.

VI. In general, the convulsive attack may be induced by preventing the animal from respiring for a very short period. In a perfectly healthy animal, a sudden and complete asphyxia gave rise to convulsions at the end of a minute and a half or two minutes. In an animal affected with the convulsive disease under consideration, asphyxia induced an attack at the end of from ten to thirty seconds, and the convulsions continued for a considerable time, notwithstanding the animal was permitted to respire, while, in an animal in entire health, the convulsions ceased almost as soon as it was permitted to respire.

VII. The first convulsive attack produced after a lesion of the spinal marrow, consists simply in convulsions of the muscles of the face and globe of the eye. Some days subsequently, the muscles of the larynx, of the neck, and of the thorax, become convulsed also; and, finally, those of the limbs and of the trunk. One of the first phenomena of a complete accession consists in spasm of the glottis, and of the inspiratory muscles.

VIII. This convulsive attack closely resembles epilepsy. That it differs from this, however, we may suppose from the fact that if, during the convulsive attack, the animal is pinched, it sometimes utters cries. If it were certain that these cries are an evidence that the animal had not lost its consciousness, these convulsions would differ from epilepsy, because the loss of consciousness is an essential character of the latter disease. But the cries, as I have shown in a memoir read to the academy, in 1849 (*comptes rendu*, t. xxix. p. 672), may not be the indications of pain, but merely reflex phenomena.

If it be not true epilepsy that I produce in cutting into the spinal marrow, it is at least an epileptiform affection appertaining to the group of convulsive maladies, in which the paroxysm may have its cause exteriorly, while those in which there exists an *aura*, or in which the lesion of a nerve from a tumour or any other cause, produce genuine epilepsy or epileptiform convulsions. In fact the irritation of the trigeminus nerve in animals in which I had divided portions of the spinal marrow, produced a convulsive attack, as in infants does an irritation of the dental nerves.

IX. A number of authors, especially Esquirol, Portal, M. Calmeil, MM. Bouchet and Cazauvielh, have pointed out the frequent coexistence of epilepsy and diseased conditions of the spinal cord. Georget and other pathologists have considered this as a mere coincidence. The facts which I have observed in animals, by demonstrating directly that lesions of the spinal cord may be the primary cause of an epileptiform attack, render it extremely probable that the epilepsy in many of the cases mentioned by the authors I have cited, depended upon the alterations in the spinal marrow revealed upon dissection.

x. I have ascertained that the number of the consecutive paroxysms was greatly augmented in the animals which I shut up in a confined place, and furnished with a large amount of nourishment. Under these circumstances, some of them had 30, 40, or 50 spontaneous paroxysms a day. The same animals submitted to an opposite regimen, and left free in a large chamber, after a few weeks did not appear to be liable to spontaneous paroxysms, and it was difficult to excite a paroxysm in them. It has appeared to me that this treatment by diet has been sufficient sometimes to effect their entire cure.

xi. In the autopsy of the animals in whom the convulsive disease in question occurred, I have found besides the injury I had inflicted upon the spinal marrow, a state of congestion at the base of the brain and of the ganglion of Gasser, on both sides when both sides of the spinal cord had been divided, but only on the side of the cord that was divided, when the section was restricted to a lateral half of it.

Conclusions.—From the facts reported in this memoir I believe myself warranted in drawing the following conclusions: 1st. Varied lesions of the spinal marrow may produce, in mammiferous animals, a convulsive affection, having considerable analogy with epilepsy; hence it would appear that in the human subject the lesions of the cord detected in the bodies of epileptics, are not a mere coincidence. 2d. Lesions of the spinal marrow may produce such a change in the vitality of the trigeminus nerve, or in that part of the brain at which this nerve terminates, that the excitation of its ramifications upon the face causes convulsions. Further, the right half of the spinal marrow exerts this influence upon the right trigeminus nerve or right side of the brain, while the left half of the cord exerts the same influence upon the left nerve or side of the brain.—*Moniteur des Hôpitaux*, Feb. 2, 1856.

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3. *Researches upon Respiration.* By Dr. Poiseuille.—The changes in volume which the lungs undergo during inspiration and expiration, produce differences in their functional condition which throw new light upon the study of respiration.

An expiration has been accomplished, and in three or four seconds the want of inspiration is experienced. All authorities are agreed as to the cause of this sensation. In fact the air within the lungs has given off a portion of its oxygen, and received a certain amount of carbonic acid—it has become irrespirable, that is to say, incapable of converting the venous into arterial blood. This air is not entirely expelled, and its place supplied with a similar amount of the external air, but in the act of inspiration pure air is mixed with this impure air. Now, as we may suppose, the whole of this mixture of pure and impure air does not serve to effect hæmatosis; a new want is quickly experienced, and expiration immediately succeeds to inspiration. Any one may, in fact, test in his own case the sensation of constraint which is consequent upon a retardation of expiration, a sensation almost as painful as that which accompanies the retardation of the inspiration that succeeds, after a few seconds, the expiratory act.

Physiologists have recognized that expiration succeeds immediately to inspiration, but they have not given any serious explanation to the fact. "One is lost in subtilities," says the work of the latest physiologist, "when we would explain how expiration succeeds inspiration." It is this point in the respiratory function which I propose to examine.

When, in inspiration, the air is drawn into the chest, the lung augments in volume; it dilates. This dilatation occurs especially in the pulmonary vesicles in consequence of their direct communication through the bronchi, with the trachea; their capacity increases, and thus their extent of surface is augmented.[1] The contrary occurs in expiration, as the volume of the lung then diminishes. Now, the bottom and sides of each vesicle contain within the tissue of which they are formed, a very abundant network of capillary vessels, which are obedient to the changes of size which the vesicles undergo, so that, as the area of the vesicle augments in inspiration, the capillaries become elongated, and their diameter at the same time diminished. On the contrary, in expiration, as the vesicles contract, and the extent of their surface diminishes, the diameter of the capillaries augments, and their length diminishes. These changes in the length and diameter of the pulmonary capillaries, coincident with inspiration and expiration, must produce necessarily a considerable difference in the quantity of blood which traverses the lung in the two periods of respiration, according to the laws which regulate the flow of fluids through tubes of very small diameter, laws, in virtue of which, when the length of the tube is doubled, the quantity of the fluid transmitted by it is reduced to one-half, and when the diameter is reduced to one-half its former size, it transmits only one-sixth the quantity of fluid it did before. Thus, in inspiration the elongated and contracted capillaries give passage to a less amount of blood than they do subsequently to expiration.

From the foregoing considerations, it results, then, that inspiration impedes the circulation through the capillaries of the lungs, while expiration favours it. Now, no one is ignorant of the perturbation which our organs, especially the brain, experience when they receive less than their usual amount of blood. Thus the period of inspiration being prolonged, there passes a less amount of blood from the right to the left side of the heart, while the quantity of blood discharged by the aortic heart to every part of the body, and consequently to the brain, is diminished. From whence results, according to our view, the sense of uneasiness which is experienced when expiration does not immediately succeed to inspiration.[2]

We believe that we have a right to conclude from what has been said, that if, on the one hand, inspiration is indispensable to carrying on the chemical changes which the air undergoes in the lungs, on the other hand, expiration causes a cessation of the physical conditions unfavourable to the passage of the blood into which the pulmonary capillaries are brought during inspiration.

Although the arguments we have adduced appear to us incontestable, we have not failed to search for facts confirmatory of our views. We believe that we have directly demonstrated that in inspiration, the lungs being dilated, their capillaries become elongated and contracted in diameter; that they give passage, when in this state, to a diminished quantity of blood, while at the same time the velocity of the blood which passes through them is decreased.

The first point has been established by injections. A mass is prepared such as will retain the liquid state at a temperature of over 40°, and becomes solid at a temperature below that. A lung not inflated, properly heated by immersion in water at 55°, is injected with the mass through the pulmonary artery. The lung still in the warm water, is now inflated through one of the bronchi, and while the inflation is still kept up, the lung is plunged in cold water. After a certain time, the matter injected by the pulmonary artery becomes chilled throughout. The portions of the two lobes are now examined by the microscope. In the lobe which had been inflated the capillaries are found to be more elongated and smaller in diameter than in the lobe which had not been inflated. This experiment has been repeated with the lungs of men, women, and children, with the same results. Thus we find anatomically established, that in the lung when inflated, that is, in the state of inspiration, the pulmonary capillaries are elongated, and their diameters diminished.

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[1] In the human subject, the trachea being tied before the chest was opened, we have found the lungs to present a volume of about 6.8 cubic decimetres. An ordinary inspiration introduces into the lungs about 600 cubic centimetres of air; in an inspiration profound and prolonged, there may enter 2 to 3 litres and more, as we have positively assured ourselves.

[2] It is proper to remark that we have endeavoured to interpret the phenomena of respiration examined in its normal condition, and not in those cases in which the will being in contention with the instinct, as in the runner, the swimmer, the diver, &c., the phenomena we have investigated present variations more or less considerable.

We have investigated the time which the same quantity of a fluid which the tissues imbibe with difficulty requires to pass through the capillaries of the lungs, when the latter are in a state of inflation and non-inflation, under a pressure of 14 to 15 millimètres, which is that of the right side of the heart, and we have ascertained in the lung of a rabbit dead from hemorrhage, that the time for the passage of about three cubic centimètres of blood in the non-inflated lung was 1′ 20″, and in the inflated lung 1′ 59″; in a lung still more fully distended, the time was 2′ 19″.

This experiment, repeated upon the lungs of cats and dogs destroyed by hemorrhage, has been followed by similar results, that is to say, the time required for the passage of the blood was always the longest in the inflated lung. We may, then, conclude that inflation retards the passage of fluids through the capillaries of the lungs.

Animals of the class of reptiles have served us to establish the truth of the third point, viz: that inspiration—dilatation of the lungs—impedes the circulation in the pulmonary capillaries. A frog is pinned to a portion of cork, and an incision made through the skin and muscles, upon one side of the chest. The lungs escape through the opening, and the volume they acquire is in proportion to the air passed into them by the animal. If the frog is very lively, the inflation will vary during limits that will permit the examination by the microscope, of the circulation through the parietes of the lung that have become transparent in consequence of the dilatation of the organ. By seizing the periods when it is more or less dilated, we can, with glasses of small power, 60 to 80 diameters, ascertain that the celerity in the movement of the globules of blood, very great during a certain size of the lung, gradually diminishes, all other things being equal, in proportion as it becomes more and more dilated. This experiment can be performed with greater facility upon the toad, which is less irritable, in general, than the frog.

Thus we find established a new connection between the circulation of the blood in the capillaries of living animals, in reference to variations in their length and diameter, and the passage of fluids in inert tubes of small diameter.

From the preceding facts we may then conclude, that inspiration impedes the capillary circulation in the lungs, and that expiration facilitates it.

We cannot conclude without noticing a corollary which flows naturally from this proposition. The physician is called upon, in certain circumstances, to practise artificial respiration; for example, in cases of asphyxia from submersion, and in the apparent death of new-born infants; now if he has merely in view the introduction of air into the lungs through the laryngeal tube, and makes *prolonged* insufflation, in place of acting at *short intervals* he will increase the asphyxia he is attempting to remove.—*Gazette Médicale de Paris*, Dec. 29, 1855.

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4. *On the Lamina Spiralis of the Cochlea.*—Professor JOHN GOODSIR gives the following interesting description of the remarkable structures lately discovered in the lamina spiralis:—

The lamina spiralis, instead of being, as hitherto supposed, a single layer, osseous in the inner, and membranous in the outer portion of its extent, is a double structure, with numerous complex arrangements in its interior.

The osseous and membranous portions of the lamina spiralis, as hitherto understood, may be considered as the basis of the entire complex structure as it is now ascertained.

The osseous portion of the lamina contains the cochlear nerves in closely arranged canals, which, at its outer margin, coalesce in a chink or fissure, which contains the ganglion recently discovered by Corti, and affords exit to the nervous filaments.

The membranous portion of the lamina consists, as discovered by Todd and Bowman, of a membrane which, except at its outer and inner margins, is closely streaked in the direction of the radius of the cochlea, and hence denominated zona pectinata. The outer margin of the membrane is attached by means of a fibro-nucleated texture to the accessory spiral lamina of Huschke, and to the neighbouring groove. This fibro-nucleated structure is the cochlear muscle of Todd and Bowman—the spiral cochlear ligament of Kölliker. The inner margin of the membrane is attached to that lip of the fissure of the osseous lamina which is next the apex of the cochlea, but so as to leave numerous orifices, or more or less oblique canals, through which, as Kölliker has ascertained, the extremities of the cochlear nerve filaments pass to the vestibular surface of the membrane. The cochlear nerves, therefore, instead of being distributed, as has hitherto been supposed, on the tympanic aspect of the lamina spiralis, pass through it to its vestibular aspect; its entire tympanic surface, and the nerves in their transit across that surface, from the fissure in the osseous to the orifices in the membranous portion, being covered by the fibro-serous lining membrane of the osseous labyrinth. It thus appears that all the complex structures in connection with the lamina spiralis, usually so called, of the cochlea, are situated on its vestibular aspect.

These structures are: 1. The habenula sulcata, situated chiefly on the osseous lamina, and discovered by Todd and Bowman. 2. The habenula denticulata, situated on the membranous lamina, discovered by Corti, and latterly ascertained by Kölliker to be connected with the cochlear nerves. 3. The membrane of Corti, covered on its vestibular surface by the serous lining membrane of the osseous labyrinth, first partially recognized by Corti, but latterly more fully described by Claudius. 4. Large vesicular cells, which occupy the space between the membrane of Corti and the lamina spiralis, usually so called, first recognized by Corti, but more precisely determined by Claudius.

The habenula sulcata is a structure of cartilaginous aspect, which, rapidly increasing in thickness as it advances to the outer margin of the osseous lamina, inclines over and beyond that margin, so as to form the sulcus spiralis of Huschke. It consists of columns, which at its thin inner edge are set perpendicular to the surface of the subjacent bones, and therefore expose their free extremities on its vestibular aspect. Towards its thick or outer edge, the columns become more and more inclined, so as to expose more and more of their sides, and at the edge itself they form a series of elongated, slightly clavate and flattened, clear glistening teeth, which project over the groove of Huschke. Some of the columns divide, others unite together, as they pass outwards to form these teeth; which are termed "teeth of the first series." In the grooves between the columns are numerous nuclei, which resist acetic acid, while the former swell up, and become somewhat striated under its action.

The habenula denticulata consists of a series of apparently jointed rods, laid on the surface of the membranous portion of the so-called lamina spiralis; each rod in the series lying in the direction of the radius of the cochlea; the first or inner segments of these rods form a series of compressed laminæ, attached across the bottom of Huschke's spiral groove, with narrow chinks between them, which are, in fact, the orifices through which the cochlear nerve filaments pass, as already stated. These central segments are the "Dents apparents of Corti." The second segment, or portion of each rod, is also compressed, and lies flat on the membranous spiral lamina, and is loose and movable, except at its inner end, where it presents an enlargement like a nucleus, which was supposed by Corti to be the joint by means of which the rod is attached to, and moves on the membrane; but which Kölliker has discovered to be the point at which one or more of the ultimate filaments of the cochlear nerves become connected with the rod, after they have passed through the orifices already mentioned. The series formed by these second segments of the rods are the so-called "teeth of the second order." The terminal segment is connected with the second by means of two short quadrilateral segments, the "coins articulaires" of Corti. The terminal segment is elongated and compressed. To its upper surface, three pyriform bodies, each of which contains a nucleus, are attached by short peduncles, so as to be laid over one another, from within outwards. Corti and Kölliker describe the outer extremity of this segment as somewhat expanded and forked, and also as free or loose. But Claudius has ascertained that the expanded extremity is attached to the lamina pectinata, so that the rod cannot move to and from the membrane, as Corti has supposed.

It must here be observed, that the first or inner segments of the rods—the "dents apparents" are attached throughout, and from their position and relations belong rather to the structure of the habenula sulcata, than to that of the habenula denticulata. The latter consists, then, essentially of the second and terminal segment described above, connected together by the short "articular" portions. The cochlear rod, properly so called, consists, therefore, of two principal segments, the inner segment being connected with one or more ultimate nerve filaments, and the outer fastened, at its external end, to the membrane on which it lies.

Corti has described a thin membrane, covered by the epithelium of the labyrinth, and extending from the prominent surface of the habenula sulcata somewhat beyond the habenula denticulata. The space between this membrane and the "dents apparents," and also the spiral groove of Huschke, are occupied, according to him, by large transparent nucleated vesicles. Similar vesicles, conceived to be epithelial by their discoverer, occupy the space between the membranous lamina spiralis and that portion of Corti's membrane which extends beyond the habenula denticulata. The rods of the cochlea, therefore, according to Corti, move like a series of hammer or piano-forte keys, in a space included between the membrane discovered by him, and the lamina spiralis, usually so called. Claudius, however, has shown that Corti's membrane extends out to the external wall of the cochlea; and that the entire space between it and the lamina spiralis, usually so called, is occupied by vesicular structure.

Prof. Goodsir next states the results of the observations which he had made, for the purpose of verifying the descriptions of Corti, Kölliker, and Claudius. The membrane of Corti extends, as Claudius has stated, to the outer wall of the cochlea, and the large cells between it and the lamina spiralis have extremely thin walls, and transparent contents, so that they resemble, when pressed together, an areolar network. Portions of the rods were also occasionally seen curled up, and as observed by Claudius, attached by their expanded extremities, in series, to the membrane on which they lie. The detection by Kölliker of the connection of the nerve filaments with the rods is, after the discoveries of Corti, the most important recent addition to our knowledge of the structure of the cochlea. Even in the ordinary view of the structure from the vestibular aspect, the nerve filaments may, without much difficulty, be observed to disappear at or in the central extremities of the rods. Their inner extremities do not correspond, as Kölliker has correctly observed, to the outer ends of the "dents apparents," but to the intervals between the latter. Kölliker holds, on chemical as well as anatomical grounds, that the rods of Corti are true terminations of the cochlear nerves—peculiar forms of the ultimate nerve fibre. He believes Corti's opinion to be erroneous, that they are developments from the membrane on which they lie, and that they constitute a physical apparatus. Nowithstanding Kölliker's opinion, it may be safely asserted that the rods of Corti present a configuration and aspect which distinguish them in the most marked manner from any form of the nerve-filament. The peculiar flattened, articulated form, the variable breadth, and, as pointed out by Claudius, the alternate arrangement of the proximal and distal segments of neighbouring rods; and, lastly, the elasticity, slight, though marked, which they possess, indicate that they are not true nerve-structures. Without stating the nature of the function he supposes them to perform, Corti believes that the rods move like a series of hammers. Harless conceives that they act as dampers, by pressing on the membrane during vibration. Kölliker, again, believes that from the almost mathematical regularity with which they are arranged along the vestibular surface of the lamina spiralis, these peculiar terminations of the cochlear nerves are the structures which distinguish the pitch, timbre, and strength of sounds, through the medium of the water of the labyrinth and the fenestra ovalis.

Prof. Goodsir concludes with some remarks on the probable functions of the different parts of the labyrinth, and more particularly of the rods of Corti.

From comparative anatomy, it would appear that the vestibule is that part of the organ by means of which any sound, or series, or combination of sounds is heard merely as *noise.* The slightest form of ear, which consists of a vestibule only, probably enables the sensorium merely to become cognizant of sound, irrespective of the pitch, or harmony of its constituent tones.

In regard to the semicircular canals, it appears probable, from their intimate connection with the vestibule, that they, like it, have to do with sound merely as *noise*, and that their function, therefore, is of secondary importance in the higher forms of the organ.

Dr. Thomas Young, with his usual sagacity, considered the cochlea as a "Micrometer of sound." Kölliker, as already stated, has put forward a similar idea, based on his knowledge of the structures described in this lecture. His conception, however, appears to be so far unsatisfactory, inasmuch as he considers the rods of Corti to be merely the extremities of the cochlear nerves; and it wants that completeness which it would have, had he been able to admit those rods to be a series of acoustic arrangements, as they are believed to be by their discoverer.

The hypothesis presents a more satisfactory form, if we assume that each of the rods of Corti, or that groups of these rods, are so organized and arranged as to act or vibrate as acoustic apparatuses appended to the extremities of the cochlear nerves. Each rod, or group of rods, may be so constituted, as alone, among all the others, to act or vibrate, when the note or harmonic cord, for which that single rod, or that group of rods, had been provided, passes through the cochlea in the form of sonant vibrations of a correspondent physical value. If this be the case, we can understand how, by the instrumentality of a cochlea, the physical value of each tone, or harmonic combination of tones, may be detected by the ear, and impressions of correspondent value transmitted along the nerve-filaments to the seat of sonant sensation in the brain. It must be borne in mind, however, that the æsthetic perception of the sensations produced by the instrumentality of the cochlea, its nerves, and the sentient centre, is a psychical function, and a result of the pre-established harmony between the mental and corporeal elements of the animal constitution, on the one hand, and external nature on the other.—*Edinburgh Med. Journ.*, Dec. 1855.

[Prof. JACKSON, of the University of Penna., believes that the function of the semicircular canal is to suppress sonorous vibrations, or to act as a damper; thus subserving to hearing the same purpose which the pigmentum nigrum does to vision. For an account of Prof. Jackson's views, see American Intelligence of this No.]

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5. *The Physiology of the Bile.*—The result of ARNOLD's experiments is in accordance, in the principal points, with that lately obtained by Nasse, Bidder, and Schmidt. 1. Arnold's observations confirm the fact that the bile may be drawn off from the body without considerable harm to the constitution, provided the quantity of food be increased. 2. The absence of bile in the intestinal canal hinders neither the digestion and absorption of albuminous substances nor that of amylum; but the absorption of fat appears impaired, as a proportionally large quantity is passing off with the feces. 3. The bile seems to prevent the putrid decomposition of the contents of the intestinal tube, the fecal discharges and flatus of dogs with fistula of the bile duct being of a remarkably offensive character. 4. The quantity of bile secreted in twenty-four hours increases and decreases with the quantity of food. Nasse's experiments had already shown that the quality of food also is of great influence; that meat produces in the dog a much more copious flow of bile than bread and other vegetable aliments.[1] 5. The quantity of bile secreted under *normal* circumstances cannot be calculated with accuracy from these experiments, as dogs affected with fistula consume a much larger amount of food. Arnold considers, therefore, the numbers given by other observers as being too high—one kilogramme of dog yields, according to him, only about two grammes of bile

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[1] Commentatio de bilis quotidie a cane secreta copia et indole, p. 18. Marburgi, 1851.

within twenty-four hours. 6. The quantity of bile was largest soon after meals, decreasing again from the fourth hour after the meal. The ingestion of water is more quickly followed by increased flow of bile, this being largest after the lapse of an hour.

Similar experiments have been performed on several dogs, in the Physiological Institution at Wurzburg, by Kõlliker, H. Müller, &c. The amount of bile obtained there is larger than that assumed by Arnold, otherwise the result does not materially differ from that described by other observers.—H. Weber, in *B. & F. Med.-Chirurg. Rev.*, Jan. 1856.

6. *Entrance of Spermatozoa into the interior of the Ova of the Frog and Rabbit.*—Bischoff, in opposition to his former views, admits now the facts discovered by Newport and Barry, concerning the entrance of the spermatozoa into the interior of the ova of the frog and rabbit.

Meissner found, likewise, several times, spermatozoa within the ovum of the rabbit. He further describes the ova of several insects (musca vomitoria, musca domestica, various species of tipula, calea, &c.), with their micropyles, and the entrance of the spermatozoa through the latter. The spermatozoa undergo, according to him, a kind of fatty metamorphosis within the ovum; a change that, however, may be observed also in those spermatozoa which are retained in the testicles or in the vesiculæ seminales.—*Ibid.*

MATERIA MEDICA AND PHARMACY.

7. *Action of Nicotin.*—From experiments upon the action of this principle on mammalia, birds, frogs, and fishes, Dr. Leonides van Praag concludes, first, that Stas and Albers were incorrect in asserting that nicotin, topically applied, operates as a caustic irritant. The first effect of the poison upon the respiration is to increase its rapidity; but this increase is always followed by retardation, a fact which all former observers appear to have overlooked. This oversight seems attributable to the late period at which the retardation may take place. In one of Van Praag's experiments, the greatest fall in the frequency of respiration was observed at a period when all the other symptoms of poisoning had already ceased. In birds, there is indeed no retardation of breathing, but there is also no increase in its frequency. In twenty-one experiments, Van Praag on no one occasion observed increased rapidity of respiration without a subsequent retardation of it. Another important symptom, which was also observed by Bernard in his experiments, is a peculiar sibilus during respiration. This is attributed by Bernard to an over-active movement of the diaphragm; but Van Praag, with more probability, ascribes it to a contraction of some part of the air-passages, and suggests that its seat is the larynx, and that its muscles are thrown into a tetanic spasm, similar to that which affects other parts of the muscular system. The pulse is increased in rapidity by nicotin, but at a later period becomes slow or imperceptible. As respects the operation of the poison on the muscular system, all observers agree. In cases which do not proceed too rapidly, it is marked by very severe and frequently alternating tonic and clonic spasms, which attack different parts of the body, either simultaneously or consecutively. Subsequently to the convulsive stage occurs great debility, connected either with partial muscular trembling, or with a lively tremor of the whole body. In cases which run a rapid course, the convulsive state is often altogether wanting, and adynamia sets in at once, with tremor. In the most rapid cases of all, the muscles are not at all affected, and the animals sometimes die without any muscular movement. The influence of nicotin upon the sensory nerves varies; in some cases, pain is experienced on its application; in others, in the larger number of instances, none. And so, too, with respect to sensibility. In some instances, complete anæsthesia was induced, while in others no alteration of sensibility was traceable. In

all cases, the pupils were dilated at first; in some, at a later period, contracted. Salivation occurred in many instances. Purging and vomiting only occurred in those cases which recovered; but recovery may ensue without vomiting. The excretion of urine was in general not remarkably altered. The duration of the poisoning varied with its severity. When very severe, death has occurred immediately, without a single symptom. Van Praag is unable to state the largest dose of nicotin which would not be dangerous to man; at all events, a dose of half a grain is not fatal. He thus sums up the operation of nicotin: "The physiological operation of nicotin is at first stimulant, and at last depressing, not only to the circulation and respiration, but also to the nervous system. Accelerated circulation, increase of the respiratory movements, and excessive irritation of the muscular system, are the phenomena observed first; the concluding symptoms are those of general depression, both of animal and organic life." He recommends further investigation into the therapeutical applicability of nicotin to the treatment of the chronic skin disease and chronic inflammations.—*B. & F. Med.-Chirurg. Rev.*, Jan. 1856, from *Virchow's Archiv. für Path. Anat. &c.*, Bd. viii. heft. 1.

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8. *On the Action of Aconitin.*—Dr. Van Praag employed the alkaloid obtained from Trommsdorf of Erfurt, who assured him of its perfect purity. It was prepared from the root of the blue variety of aconite indigenous to Switzerland. Experiments were made upon mammalia, birds, frogs, and fishes. From the examinations of the bodies of the poisoned animals after death, he saw no reason to conclude that aconitin produced gastro-enteritis; neither do his examinations lead him to place prominently forward, as Schroff has sought to do, a non-coagulable state of the blood as a symptom of poisoning by aconitin.

As to the physiological operation of nicotin, the general conclusions drawn are, "that aconitin exercises a retarding influence upon the respiration, a paralyzing operation on the voluntary muscular system, and a depressing influence upon the brain." A retarding operation on the circulation was less marked than in the experiments of Schroff, and he concludes "that aconitin varies very greatly in the frequency with which it induces a reduction of the pulse." In general, it produces dilatation of the pupils. Schroff says that at the commencement of the experiment the pupil exhibits great variability, and from to time even becomes contracted, but that this at length always terminates in dilatation. Salivation and increased excretion of urine must be regarded as amongst the less constant symptoms. Schroff describes as occurring in the human subject a peculiar contractile, compressing, even painful, sensation in the cheeks, over the jaws and forehead—in short, in the parts supplied by the trigeminous nerve. The only objective symptom observed by Van Praag that could be explained by such a sensation was licking of the mouth, which was noticed in two cases. Where death occurred suddenly, it was by asphyxia; but in cases where it was deferred for some time, the animals died apparently from exhaustion. From one experiment made with the alcoholic extract of aconite, it was observed that while, for the most part, its action agreed with that of the alkaloid, the symptoms referable to the stomach and bowels were more severe, and gastro-enteritis was moreover induced.

Judging from its physiological operation, Dr. Van Praag would consider aconitin adapted to those cases of delirium and mania which proceed from over-irritation. Perhaps, also, he suggests, it might be tried in severe tonic or clonic spasms, tetanus, trismus, chorea, and pure spasmodic asthma. He sums up thus his observations on its therapeutical applicability: 1. Aconitin operates much in the same way as the alcoholic extract of aconite, and is therefore to be recommended in those diseases in which this remedy has been proved to be serviceable. 2. Aconitin is far preferable to any other preparation of aconite, on account of the unchangeable nature of the well-prepared alkaloid; whereas the activity of the aconite, and consequently of its ordinary preparations, varies with a number of circumstances—such as the locality in which it grows, the year, &c. 3. Aconitin is wanting in the undesirable acridity of the extract, and consequently it exerts only the favourable operation of the extract without its injurious accessories.—*Ibid.*

9. *On the Use of Aconite in Disease.*—Dr. K. D. Schroff draws attention to two conclusions which he drew from his experiments with aconite, viz: 1. That both aconite and aconitin in adequate doses produces in healthy men and in rabbits increased secretion of urine. 2. That they act remarkably in depressing the action of the heart, either immediately or after a brief increase of the heart's action. He now says that he has observed both these effects also on administering aconite in disease. He relates, by way of illustration, a case of pleurisy in which he gave it with these results: Appropriate treatment had already lessened the fever, and reduced the frequency of the pulse to 100; but the urine remained scanty. On the 13th July, he began to give one-sixth of a grain of the alcoholic extract of the root of the aconitum neomontanum four times a day. After the first six doses, the frequency of the pulse was reduced about six beats, and the urine became somewhat more abundant, lighter coloured, and less thick. The dose was now increased to one-third of a grain four times a day, and then the quantity of urine became increased in a very remarkable degree, simultaneously with a diminution of all the morbid symptoms, while the pulse sank to 50. He considers the employment of aconite adapted for those cases in which it is desired to reduce increased action of the heart, and mentions especially hypertrophy of the heart, aneurism of the aorta and large arteries, and effusion into the pericardium, pleura, &c. The latter half of the paper is occupied by the reassertion of the conclusions derived from his physiological experiments, on which doubt has been thrown by Van Praag. He maintains his conclusions on the ground chiefly of his experiments on the human subject and rabbits, while Van Praag made no experiments upon the former, and only three upon the latter—in two of which death either occurred too rapidly for the diuretic effect to be observed, while in the third the dose given was smaller than Schroff has observed to produce this effect. In Schroff's experiments on the human subject and rabbits, large doses invariably operated in increasing the urine. In the former, the aconitin was given in doses of 0.02 to 0.05 grammes, while of the alcoholic extract 0.1 gramme was necessary. As to the reduction of the pulse, he asserts that, putting aside numerous experiments upon rabbits, this result occurred in twelve experiments made on the human subject with aconitin, and in thirty-eight experiments made with different preparations of various parts of the plant, and of three varieties of aconite. Large doses, however, are necessary. The effect was first observed with doses of 0.01 gramme of aconitin, and increased proportionally with the increase of the dose; 0.1 gramme of the alcoholic extract was necessary, and 0.2 gramme of the watery extract.—*Ibid.*, from *Wochenblatt der Zeitsch der Gesellschaft der Aerzte du Wien.* Ap. 1855.

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10. *Experiments on the Operation of Loss of Blood upon the Course of Poisoning by Strychnine.* By W. Kaupp.—The object of these experiments was to test the doctrine which, since the known experiments of Magendie, has been universally held, that the rapidity of absorption, and thus of the operation of poisons, was lessened by a full condition of the vascular system, and increased by loss of blood. The method of experiment adopted was the introduction of a solution of nitrate of strychnine ($\frac{1}{32}$d of a grain he found best adapted for the purpose) beneath the integument in the back of rabbits. Dr. Kaupp compares the rapidity of poisoning in those animals which were not bled, and in those which were bled from the jugular vein before and after the application of the poison. He furnishes the results in some tables, of which the following may be regarded as a *résumé:*—

In the case of those rabbits which were not bled, the tetanus set in earlier than in those which were bled, viz: in a mean period of 4 mins. 30 secs.; while in those which were bled, in an average time of 5 m. 13 s., giving thus a difference of 43 s. The weight of the animal seemed to exert a marked influence upon the early or late occurrence of the tetanus. Comparing the results in the six heavier and six lighter unbled animals, the average time of occurrence of the tetanus in the former was 5 m. 45 s., and in the latter 3 m. 36 s. This result is much more striking in the instances of those animals which were bled, in which the tetanus on the average occurred in the heavier after 36 m.

48 s., but in the lighter after 14 m. 18 s. Much more striking even than the time of occurrence of tetanus was the difference between the periods of death in the bled and unbled animals. The average time which elapsed before death in those not bled was 9 m. 39 s., while in those which were bled it was 27 m. 56 s. The weight of the animals here also exerted an influence—the mean period of death (taking the bled and unbled together) was 23 m. 12 s., after application of the poison, for the heavier, and 13 m. 56 s. for the lighter animals. The sex of the animals also seemed to exert an influence, the males dying on an average in 15 m., and the females in 25 m. The amount of the venesection exerted an influence, the proportion of the duration of poisoning after a large and small bloodletting being as 4 : 2½. It was further observed that when the animal was placed in a small basket, and thus hindered from springing about, both the occurrence of the poisoning and death were delayed.

The results of these experiments are thus directly opposed to the doctrine generally accepted, and show that both the occurrence of the symptoms of poisoning and the death (using these as the measure of the rapidity of absorption) are really delayed by loss of blood.

This is a very important paper, and the subject well deserves following up, since the conclusions of this experimenter, if confirmed and extended, must lead to therapeutical reforms.—*B. & F. Med.-Chirurg. Rev.*, Jan. 1856, from *Vierordt's Archiv für Phys. Heilk.* Heft 1, 1855.

11. *Parsley Oil* (*Apiol*) *as a Remedy for Intermittent Fever.*—MM. JORET and HOMOLLE state that parsley oil, in doses of fifty centigrammes to one gramme, determines a slight cerebral excitement similar to that produced by coffee, with epigastric warmth, and a sense of strength and comfort. After doses of two to four grammes, phenomena of intoxication are observed, scintillations, dizziness, vertigo, hissing in the ears, frontal headache, &c. They compare these symptoms with those which follow a strong dose of sulphate of quinine. It is only exceptionally that they have found borborygmi, nausea, and colic, with bilious diarrhœa, to supervene. They also consider that it is emmenagogue, and they place it in the class of tonics.

In discussing its applicability to the cure of intermittents, they describe briefly the particulars of forty-three cases treated by M. Lefévre at Rochefort, M. Dupré at Bourg-en-Bresse, M. Dénis at the hospital of Auray, M. Fernet of Paris, and by M. Amic in Martinique. Of this number, thirty-seven were cured and had no relapse; and in six, though the fever was not removed, yet it was modified in intensity. Of these forty-three cases, twenty-one were quotidians, eighteen tertians, and four quartans; five quotidians and one quartan resisted the remedy—all the others were cured. The writers consider that a proportion of cures thus amounting to eighty-six per cent., suffices to prove the value of parsley oil in indigenous intermittents. As respects the intermittents of hot countries, they group together the observations accumulated by a Commission of the Society of Pharmacy to test the substitutes for quinine at Rome, Perpignan, and Ajaccio, with those of Dr. Amic of Martinique. Of thirty cases thus treated, sixteen were cured. Nineteen of these were quotidian, of which twelve were cured; ten were tertians, of which four were cured; and one quartan, which was not cured. The conclusion drawn is, that if parsley oil be not of equal value with quinine in treating the intermittents of hot climates, it may yet be very well substituted for that remedy in indigenous intermittents; and they consider that it may also prove serviceable in intermittent neuralgia, and the night sweats of phthisis.—*B. & F. Med.-Chirurg. Rev.*, Jan. 1856, from *L'Union Médicale*, Jan. and Feb. 1855.

12. *Iodine Paint with Mastic.*—The following is the formula for an iodine paint, made adhesive by the addition of mastic, which is used at the Moorfields Ophthalmic Hospital: ℞.—Spirit. vin. rect. ʒij; sp. æth. nitr. ʒiv; mastic ʒss; iodinii, ad saturat. The advantage gained is, that it does not run about the skin so much. Iodine counter-irritation to the lids continues to hold a high place in the estimation of the surgeons to this hospital.—*Med. Times and Gaz.*, Feb. 9, 1856.

13. *Astringent Lotion for Ulcers.*—A lotion consisting of half a drachm of the tincture of catechu, to a pint of the decoction of oak bark, is a favourite one at the Aldersgate Street Dispensary, as an application to foul and indolent ulcers on the leg. Mr. Savory, the surgeon to the institution, informs us that he finds it superior in efficiency to most other astringents. It is applied freely, a piece of lint being well soaked in it, and laid over the sore.—*Ibid.*

14. *Chloride of Zinc Collyrium.*—At the Royal Ophthalmic Hospital (Moorfields), Mr. Critchett has for some time been employing a lotion of chloride of zinc as an eye-water, in cases of vascular and thickened conjunctiva. He holds that the disease is a sort of "gleet of the eye," and analogous in nature to gleet of the urethra. The strength used, is one grain to the ounce. It has not yet found its way into the Hospital Pharmacopœia.—*Ibid.*

MEDICAL PATHOLOGY AND THERAPEUTICS, AND PRACTICAL MEDICINE.

15. *Asphyxia, and its Treatment.*—Dr. Marshall Hall read a paper on this subject before the Harveian Society, December 6, 1856.

He began by stating that, as the details of his investigation were before the Royal Humane Society, he could only place a brief abstract of them before the members of the Harveian Society.

His object was to show:—

1st. That the blood during *circulation* becomes *self-poisoning*, chiefly by means of the carbonic acid formed.

2d. That the poison is, *pari passu*, eliminated by respiration.

3d. That, during suspended respiration, this carbonic acid poison accumulates in the blood.

4th. That *the special* means of obviating this effect, the *unicum remedium*, is to excite or imitate respiration.

5th. That every means of augmenting the circulation *without* simultaneous respiration, augments the formation of the carbonic acid poison, and consequently tends to destroy life.

6th. That the modes of inducing artifical respiration hitherto proposed are nugatory and injurious, for the following reasons:—

7th. 1. The posture in which this measure has been attempted being the supine, the tongue falls backwards, carries with it the epiglottis, and closes the glottis against all *in*spiration.

8th. 2. That fluids accumulated in the fauces, either from external sources or by regurgitation from the stomach, operate in the same manner.

9th. 3. That the means of artificial respiration hitherto employed have been either of the nature of the *forcing*-pump or of the *suction*-pump.

10th. 4. That the former of these, besides having to overcome the impediment already described at the glottis, must necessarily be of force great enough to raise the ribs and carry down the diaphragm; and that such a force, as proved by Legallois and Leroy, may injure the delicate tissues of the lungs.

11th. 5. That the other mode of inducing respiration, by applying and removing pressure, is utterly inefficient, for the reason already mentioned, viz: the obstruction at the glottis.

12th. That there is ONE mode of inducing respiration which at once obviates all these difficulties, and proves all-efficient.

13th. That this consists: 1. In exchanging the *supine* for the PRONE position. 2. In inducing the movements of respiration by alternately allowing the weight of the subject to press on the thorax and abdomen by laying it on its face, and removing that pressure by raising it; this last effect being accomplished by raising the shoulders on the ilia as a centre, or by raising both shoulders and hips together by lifting; or, lastly, by turning the subject on the side.

14th. That these measures may be designated *prone*-respiration and *postural*-respiration respectively.

15th. That to these measures may be added gentle pressure, made on the posterior mark of the thorax and ribs, and its removal alternately.

16th. That whilst these measures are being adopted, others subsidiary, and injurious without them, may be superadded. Such are—

17th. Rubbing the limbs upwards with firm pressure, to promote warmth and the circulation; removing the wet clothes and replacing them with dry ones which the bystanders may supply, etc. etc.

18th. *Before* these measures are begun, every means of *exciting* respiration physiologically—such as irritating the nostrils and the fauces, dashing cold and hot water *alternately* on the face, etc., are to be fairly tried, the patient being first placed in the prone position for a moment, in order that any fluid present in the fauces may flow away.

19th. The face and chest may also, when the season is not inclement, be exposed to the breeze.

20th. But no time must be lost; the patient must be treated instantly, on the spot; messengers being despatched for medical aid, and every means of relief.

21st. It will be observed that the measures proposed are limited to such as may be *always* available; other questions, such as those that relate to the use of the warm-bath, of galvanism, of the inhalation of oxygen, or of pure but dilute ammonia (to neutralize the carbonic acid blood-poison), the transfusion of arterial blood, etc. etc., being left for another occasion.

Dr. Marshall Hall then observed that it would be obvious that the RULES for rescuing the patient affected by suspended respiration must undergo considerable modification. He added, that the investigation was also in the state of *progress;* and that he had especially to ascertain the precise *value* of each of our modes of treatment by careful *comparative* experiment, not again trusting to mere experience, as it is called, which, as it does not consist in *comparative* experiments, can lead to no accurate and definite results. For instance, the opinions in regard to the value of the warm-bath are not only different, but actually opposite, here and in France, judging from experience; whilst experiment and theory alike *prove* that it is and must be injurious, unless it be preceded and attended by respiration.—*Lancet*, Dec. 22, 1855.

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16. *Linear Cauterization of the Thorax in Asphyxia.*—M. FAURE's proposal is founded upon numerous experiments on animals asphyxiated, in a variety of modes, and on one case of asphyxia by charcoal, occurring in a girl. The actual cautery, he observes, has long since been employed in distinguishing real from apparent death, and for the purpose of resuscitation; but it has not succeeded, owing to the absence of proper method and due perseverance. When properly used, however great the danger, as long as even the feeblest respiratory movements continue, it will establish a favourable reaction, and to this end is far superior to all other means. The following are the conclusions arrived at: 1. When the heart has entirely ceased to beat, or when the pulsations are fewer than three in five seconds, death is certain, whatever may be done; but, except in these very extreme cases, cauterization may restore life. 2. Deep and long parallel lines must be traced, by a strongly heated iron, along the upper and lateral parts of the chest, opposite the four or five first ribs, this being the part of the body that longest retains the faculty of being stimulated. 3. The first effect is a muscular contraction, which is quite local, and without sign of pain; the ribs then move, the thorax enlarges, and inspiration becomes more ample. Sometimes more than a minute elapses before any sign of sensibility can be induced, even by the most intense burn. 4. When the general sensibility has become aroused, it is of the highest importance to keep it excited for a long time; and to this end flagellation is the easiest and most certain means. It must be persisted in for a long time, and the patient must be well watched. 5. Frequently asphyxiated persons die after having been restored; but this must be referred rather to the shock sustained by the economy, in consequence of the suppression of respiration, than to the introduction of any poisonous principle, inasmuch as such death has occurred in

persons who have not been exposed to any toxical influence, as in those drowned.—*Comptes Rendus*, tom. xli. p. 308.

17. *Suffocating Goitre.*—M. Bonnet, in a paper in the *Gazette Médicale* (No. xxxv.), calls attention to a form of goitre which has been but little noticed, but which, although small in size, may induce symptoms of suffocation, rendering the patient incapable of any exertion. This arises from its being placed behind the sternum and clavicle, and its development in front being prevented by these bones, so that it is thrust down against the trachea and the nerves in its vicinity. The object of the author's recommendation is the bringing the tumour into and retaining it in a more superficial position.

In order to produce these suffocating symptoms the tumour must be small, for if its diameter exceeded six or seven centimetres, it would lodge against the upper edge of the sternum and clavicle. Another character is its mobility, by reason of which it descends into the chest during deep inspiration, and rises out of it more or less during expiration. Owing to the compression of the walls of the chest by the external air being insufficiently balanced by the lesser quantity that now gains admission through the narrowed trachea, an obvious increase is produced in the supra-sternal and supra-clavicular depressions—an increase that may be useful in diagnosis. During expiration this movable goitre sometimes ascends sufficiently high to enable us to slide the fingers beneath it, and retain it for an instant in the cervical region, the dyspnœa and *ronflement* proportionally diminishing. In place of being median, the goitre may be lateral, and placed between the trachea and the nerves and bloodvessels as these pass behind the clavicle, and then may give rise to symptoms due to compression of the nerves.

To effect the curative displacement of these tumours, a surgical operation is required. They may be raised by curved needles traversing the tumour from below upwards, or by the employment of a kind of fork; but, as such foreign bodies can only be retained for some days, a vital must be substituted for their mechanical action. This is effected by inducing an adhesive inflammation, capable of fixing the thyroid in its new position, and of determining, at least, its partial resolution. To this end the chloride of zinc is the best means; it forms a dry eschar, on the fall of which the tumour protrudes through the opening left; and, if the application has been sufficiently prolonged, it will destroy a portion of the tumour itself, without inducing any accident. The author and M. Bouvier have now performed this operation nine times, and the results have justified its adoption, it having succeeded in eight of the cases. How far the results will be permanent remains to be seen. Three of the eight patients have been seen, one six weeks, and the other five years after the cure; while in the third, the symptoms, after being completely relieved, gradually returned in three weeks, the author believing the cauterization had not been deep enough to cause a sufficient hernia of the thyroid. M. Bonnet thinks that practitioners will do well, in cases of reputed nervous asthma, to examine whether small unperceived tumours may not exist between the neck and the chest, exerting compression on the air tubes and nervous trunks.

18. *Croup and its Methods of Treatment.*—Dr. Honerkopff has recently published a paper, in which he extols the administration of the sulphate of copper in this disease. He has used this substance in 99 cases of croup, 77 of which recovered; and the total quantity administered by him to these patients was 2846 grains, or, on an average, 31½ grains each. He has never seen any poisonous effects result from its use, although one child got 27 grains daily for a week, or in all 216 grains; and another, 4½ years old, took 150 grains in 7 days, and a third, aged 2½, 120 grains in three days. No inflammation, gangrene, or other bad symptoms took place. In 8 out of the 13 cases which proved fatal, there were either other diseases co-existing, or the author was called to see them too late, so that he considered that his remedy failed in only 5 out of the remaining 82 cases. The mode in which he administered the salt was to dissolve from 6 to 8 grains in ℥j of water; and, according to the age of the patient, and the severity of the vomiting induced, to administer, more or less frequently, from

a teaspoonful to a tablespoonful of this solution, until vomiting occurred. The nature of the vomiting should always regulate its administration; for the induction of vomiting is absolutely essential for the therapeutic action of the remedy, as it has a kind of specific influence on the disease. The more severe the case, the more frequently does the author administer the doses of the solution—giving them first at intervals of from 10 to 15 minutes. After from 4 to 6 doses have been given, sooner or later the urgent symptoms are found to abate. At first, indeed, after the first spoonful has been taken, the cough becomes less frequent and less troublesome, and the difficult respiration and general distress are also relieved. Thereafter, the croupy sound of the cough becomes changed, and crepitating mucous râles are audible. When this improvement has fairly commenced, the medicine may be administered less frequently, say every 20 or 30 minutes, and still more seldom as the malady recedes. In very severe cases, the remedy should be continued every two hours, even after all traces of the cough have gone, because otherwise a relapse may occur in the evening, and necessitate a renewal of large doses of the salt. It is only in very bad cases, when, after a period of 12 or more hours, no change in the croup-sounds has taken place, that we need despair of success; and the author observes, that very often a change for the better takes place quite suddenly and unexpectedly. He warns us against remissness in our treatment after signs of improvement have commenced, as the disease, if unheeded, may break out afresh. In cases where the copper fails to produce vomiting, we need expect no good from its administration, and we have then to choose between tracheotomy, cold affusion, and musk, and the two latter remedies, according to Hönerkopff, may induce irritability of the stomach, and thus prepare the way for the renewed use of the sulphate.—*Journal für Kinderkrankheiten*, March and April, 1855.

Dr. J. Samter, of Posen, has also written a paper in praise of the sulphate of copper in this disease. His remarks on its advantages and mode of administration so closely resemble those of Hönerkopff which we have given, that it is unnecessary to quote them here at length. He uses a solution of from 4 to 8 grains (and, in severe cases, 10 to 12 grains), in ℥ij of water; of this he gives ʒij repeatedly, till vomiting is induced, and thereafter ʒj every two hours.

In addition to the use of sulphate of copper, this author, at the beginning of the disease, applies four, eight, or twelve leeches to the larynx, and especially if there be any pain felt there, and he afterwards applies stimulating epithenes. He also uses the inhalation of powdered alum and sugar, employs warm baths, and envelops the feet in hot sand, etc.—*Günsburg Zeitschrift*, vj. 2, 1855.

Dr. Luzsinsky considers that there are four therapeutical indications in the treatment of croup which must be attended to by the physician. 1st. To change the peculiar blood crasis which exists. 2d. To prevent the localization of the inflammatory process in the larynx. 3d. To treat the spasm of the larynx. And 4th. To encounter and destroy the false membranes which have been formed.

For the fulfilment of the first indication, most men have recommended the use of mercurials; but Luzsinsky depends more upon alkalies, and especially on the carbonate of potass, which exercises a solvent action on all the albuminous products of the organism. Its use retards the development of the constituents of the blood, and greatly impairs the vital coagulability and inherent plasticity of that fluid. This is the theory of the action of this salt, which Eggert recommended as a specific in croup, after an experience of it in about 250 cases. It may be given advantageously in doses of from ʒss to ʒij daily. Carbonate of soda may do in mild cases, but the other alkali is alone to be relied on in more severe ones.

The second indication may be answered by the application of a blister, the size of a crown piece, to the upper part of the manubrium of the sternum.

Spasm of the larynx is most surely treated by opium, applied externally, in conjunction with vesicants (15 grains to ʒss of opium, to ʒss of lard), and also given in small doses internally.

To arrest the formation of the pseudo-membranes, nitrate of silver, in a concentrated solution, may be applied to the fauces and entrance of the larynx.

Emetics may thereafter be given, and they are only necessary in the exudative stage. Luzsinsky gives decided preference to the use of sulphate of copper, which he administers by giving, every 15 minutes, a teaspoonful of a solution of 2 or 4 grains (or even more), of the salt in ℥iiss of some fluid. He does not look upon tracheotomy, in croup, in a favourable light.

Out of 30 cases treated thus by Dr. L., only 7 died.—*Edinburgh Med. Journ.*, from *Oester. Zeitschrift*, i. 6, 8, 10, 1855; and *Schmidt's Jahrb.*, xi. p. 207, 1855.

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19. *On the Efficacy of Small Doses of Morphia in certain Chest Diseases.*—Dr. Edward Smith read before the Medical Society of London, January 12, 1856, a paper on this subject. The dose referred to by the author was from the sixty-fourth to the twenty-fourth of a grain for an infant or young child, and from the twentieth to the twelfth of a grain for an adult, repeated from three to six times in the twenty-four hours. The principle involved was the removal of excessive cough in those cases in which the cough resulted from nervous irritability of the structures of the air-passages, and thereby to prevent various ill effects which would follow from its continuance. He did not regard the cough as a symptom merely, but as the result of irritation, and it was by the removal of the irritation that the cough was to be prevented. He showed that the effect of minute and often repeated doses of morphia was far more efficacious than occasional and larger doses, and that the sensorium remained quite unaffected, and the bowels nearly so, under its influence, and therefore that no disturbance to the general system was produced by its administration. The author selected three diseases in illustration of the merits of the remedy, viz: hooping-cough, the ordinary and spasmodic form of chronic bronchitis, and phthisis. Hooping-cough he regarded as essentially a disease of the nervous system, quite apart from inflammation, and considered the principle of treatment to be the removal of the spasm, so that the cough might be reduced to the harmless state of common cough. He believed the secretion to be chiefly due to the violence of the cough, and consequently that the aim should not be to increase the secretion by expectorants, but to stop the cough, and allow the secretion to cease. He was also of opinion that the congestion of the lungs in more advanced cases, which often leads to other complications, is chiefly due to the spasmodic cough. Thus he inferred that the prevention of the cough was in fact the prevention of all serious and fatal complications. The treatment he recommended was first to remove all sources of irritation, to give nutritive food in small quantities and very frequently, to expose the patient to cool pure air, and in general to place it in the best sanitary conditions, and then to administer the morphia. The system adopted in giving the morphia was to begin with a very small dose (say the sixty-fourth of a grain to an infant four months old), and, if need be, to rapidly increase it until the slightest drowsiness was perceptible, and then to regard that effect as the measure of the dose, and to continue the dose and effect until the spasm subsided. He particularly insisted upon the fact that any dose less than sufficient to affect the sensorium in the slightest degree was sufficient for the immediate cure of the disease, and therefore that the art in the administration was to produce and maintain that effect in the quickest way, and with the smallest dose. After giving the sixty-fourth of a grain for three or four doses without any drowsiness, he would then increase it to the forty-eighth of a grain for three or four more doses, and again, if need be, to the thirty-eighth and thirty-second of a grain until the slightest drowsiness appeared. Thus the proper dose would soon be ascertained, and within one or two days the spasm would be materially lessened. He stated that within four, and commonly within ten days, he had cured severe cases so far as to reduce the spasmodic to a common cough, and to prevent the recurrence of any complication. The points he especially urged were, the rapid increase of the dose, to produce the desired effect, and the careful maintenance of the effect by regulating the dose. He insisted upon the necessity of using a graduated measure in the administration of the remedy.

Chronic Bronchitis.—The attacks of this disease, as commonly seen in the *habitués* of hospitals, he believed not to be inflammatory but nervous or spasmodic, both in the cough and in the dyspnœa, and also even in the sense of constriction of the chest; and that the aim should not be to increase the secretion, but simply and purely to remove the nervous condition on which the cough, secretion, dyspnœa, and tightness depended. The cough he believed to be much more than needful to remove detached phlegm, and by its continuance to excite the secretion, and he inferred that when relief was obtained with the increase of secretion the former was not due to the latter, but both resulted from exhaustion of the nervous irritability by lapse of time. He therefore commonly banished expectorants, and administered small doses of morphia. The dose was usually the sixteenth of a grain, repeated three or four times a day. Very speedily the cough was relieved, and then the dyspnœa, and at the same time or subsequently the sense of tightness. He maintained that the same remedy which first relieved the cough only, would, by continuance or increase, relieve the dyspnœa also. As a preliminary step, all sources of irritation were attended to, especially the liver, stomach, and bowels. The croton oil liniment was efficacious only on the principle laid down by the author, and not upon the relief of any supposed inflammatory action.

Phthisis.—The exhibition of small doses of morphia in phthisis was not with a view to cure that disease, but to lessen or prevent the occurrence of certain important complications, which the author believed to be in great part due to the cough; such were hæmoptysis, congestion or inflammatory action, vomiting after food, increase of night perspiration, disturbance of sleep, and the increase of the general irritability of the system. He was decidedly of opinion, that in all stages of the disease the cough is commonly greater than is required upon the principles of relieving the system, and therefore, and because it leads to further evils, it ought to be arrested. He especially referred to two periods. 1st. In the early stage, when there is scarcely any secretion, and when the patient voluntarily adds to the cough, to remove a little phlegm, which he believes to be its cause. He considered it essential to disabuse the patient's mind of this error, and by that means, and by the aid of morphia, to arrest the cough. 2d. He had ascertained that the vomiting of the food after meals was not usually due to disorder of the digestive organs, but to cough accompanying an irritable state of the general system, and a state of repletion of the stomach, and he had commonly prevented it by reducing the quantity of food at each meal (giving it more frequently), and by administering the sixteenth of a grain of morphia immediately before or after a meal, as well as at the usual intervals during the day. A more tranquil sleep and less severe night-sweats resulted from the small dose of morphia repeated once or twice in the night than when one large dose was given.

In some of the above conditions the author considered the cough to have the importance not merely of a symptom but of a substantive disease, and as such to require especial attention in the treatment; but as it was oftentimes associated with constitutional ailments, he frequently combined the morphia with vegetable bitters, and with the sesquichloride of iron.

He (Dr. Edward Smith) preferred morphia to other narcotics, because its strength is more uniform than that of vegetable extracts, and more permanent than that of hydrocyanic acid; and upon the whole it was as easily capable of minute subdivision and increase in its dose, and was less dangerous in its administration.—*Lancet*, Jan. 26, 1856.

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20. *Inhalation of Chloroform in Pneumonia, Bronchitis, etc.*—Dr. Hutawa states that he has obtained the happiest results by causing ʒss or ʒj of chloroform to be inhaled every hour, day and night, by patients affected with pneumonia.—*Preuss. Verein. Zeit.*, 11, 1855.

Dr. Malmsten, of Stockholm, stated recently, at a meeting of the medical society of that city, that he had cured two cases of pneumonia, and one case of capillary bronchitis by means of inhalations of chloroform. Dr. Abelin observed that he had used inhalations of this anæsthetic in three cases of pertussis, which were complicated with capillary bronchitis, without good results. Dr. Berg remarked that chloroform used thus might relieve a very serious part of the disease, viz: the local pain—a symptom which was too little attended to. Future observations on the action of chloroform, when given in this disease, might prove that pain constituted a most prominent and serious feature of the malady.—*Edinburgh Med. Journ.*, from *Journal für Kinderkrankheiten.* 1855. Band. xxiv. p. 435.

21. *Diagnostic Importance of Bronchitic Signs as preceding and masking Tuberculous Disease of the Lungs.*—There are some points with regard to the physical diagnosis of phthisis pulmonalis which require elucidation; and with the view of assisting practitioners in forming correct conclusions, under difficult circumstances, Professor J. H. Bennett has, in an interesting paper in the *Edinburgh Medical Journal* (Jan. 1856), directed attention to some facts of importance.

The relation of bronchitis to pulmonary phthisis, he observes, has necessarily engaged the attention of all those who have had much experience in treating those affections. The term "bronchial phthisis" (however vaguely employed) is in itself sufficient evidence of this, and serves to express a condition in which, with all the usual signs and symptoms of phthisis, those significant of bronchitis are always present to a great degree. But there never can be a case of phthisis without, at the same time, more or less lesion of the bronchi, and the supervention of bronchitis and emphysema on the tubercular disease is so very general as to require no comment. The cases which, in practice, are so difficult, especially in a diagnostic point of view, are those where bronchitis ushers in phthisis, and serves to mask the tubercular disease.

From a consideration of the constant signs of bronchitis, and the frequency of emphysema as an accompaniment of phthisis, it must be evident that some cases are very likely to occur where the physical signs of the two former are likely to mask those of the latter. Especially, it is probable that conditions of the lungs may exist, in which the augmented sonoriety of emphysema will so counterbalance the increased dulness of tubercular deposition, that the resulting note, on percussion, may assume a medium character, and thereby approach that of health. Whether such be the true explanation of the absence of positive signs, on percussion, in the foregoing cases, I will not pretend to say; but, in the absence of a more positive theory, I offer it as the most plausible that occurs to me.

Numerous other comments might be made regarding the relation of pulmonary tubercle to bronchitis, especially in their chronic forms; but I have contented myself, in this place, with pointing out the following important facts:—

1st. That phthisis pulmonalis may exist and prove fatal, and yet, *during the whole of its progress*, only give rise to the physical signs usually considered as indicative of bronchitis with emphysema.

2d. That such signs, when persistent with all the symptoms of phthisis, should render the physician very suspicious of the existence of pulmonary tubercle.

3d. That the analeptic treatment of such cases, and the avoidance of cough mixtures, or other means directed to the alleviation of mere symptoms, offers the surest means for procuring arrestment of the disease, and bringing about an ultimate recovery.

22. *Diagnostic Value of a Microscopic Examination of the Sputum.*—By J. H. Bennett, M. D. A proper appreciation of the structure of sputum requires a thorough knowledge of histology, as, mixed with the expectoration, may be found. 1st. The natural secretion of the salivary and mucous glands, with the epithelial structures of the mouth, fauces, and pharynx. 2d. All the structures that enter into the composition of the bronchi and lungs, in various stages of disintegration. 3d. The results of various morbid processes, in different stages of development or disintegration, such as the inflammatory, tubercular, or cancerous exudations, extravasations of blood, earthy concretions, etc.; and, 4th. All kinds of substances which enter into the composition of food, which adhere to the mouth and teeth, such as starch corpuscles, and the different elements

which enter into the composition of the various vegetable and animal substances used as aliment. Great pains and considerable time are also required in the examination, so as to satisfy the inquirer that nothing of importance has been overlooked.

Extensive examination of sputum with the microscope has, up to a recent period, served to persuade most scientific physicians that it was of little practical importance, inasmuch as percussion and auscultation yield us a more efficient and more exact means of determining the changes which go on in the lung. The recent careful examination of sputum, however, by Dr. Andrew Clark,[1] as well as a case which has come under my notice, may induce them to modify that opinion.

Professor Van der Kolk, of Utrecht,[2] was the first who directed attention to the fragments of the elastic fibres of the lung in sputum, as occasionally being of diagnostic importance. That such fibres were common in the sputum of consumptives, after ulceration of the lung has commenced, is easily proved, and has been familiar to myself for the last fifteen years. The important part of Van der Kolk's Memoir, however, is contained in the following passage: "But we ought to determine if these fibres are only observed when phthisis is already well advanced, and produced great ravages, or if they exist in expectorated matter at the first formation of vomicæ, so that they enable us to determine their existence when commencing. My conviction, with regard to this important problem, is, that it is exactly at the commencement of phthisis, and at the first formation of a vomica, that the elastic fibres were present in the greatest abundance, and that they may then be considered as among the most positive signs we possess of the presence of a cavern. Later, when the cavity has acquired a certain extent, these fibres become more rare in the expectoration, and are with difficulty distinguished." This statement is supported by a case, in which very insignificant signs could be determined by auscultation, although the general symptoms indicated phthisis—yet, where the fibres existed in considerable numbers in the sputum, and led to a diagnosis, which was confirmed by the subsequent progress of the case.

Such an instance as that described by Van der Kolk I believe to be very rare, and the question always arises, whether the lungs were examined with sufficient care, so as to render it certain that, whilst fibres of elastic tissue, derived from those organs, existed in the sputum, no auscultatory sign could be detected. But that this does occasionally occur, I have now no doubt; 1st, from the facts previously given, which show that advanced phthisis may exist without any positive signs; and, 2d, from the following case, which fully confirms the statement made by the distinguished professor of Utrecht:—

Case IV.—In August, 1854, I was consulted, when in London, by a lady, Mrs. B., æt. 23, who had for some time suffered from cough, accompanied by muco-purulent expectoration. There was little emaciation, the general powers of the system did not appear to be much impaired, although she complained somewhat of weakness, and diminution of appetite. Frequent cough, with expectoration, were the principal symptoms. Careful percussion and auscultation of the chest (which was well formed), elicited positively nothing; the percussion note was normal and equal on both sides; the respiratory murmurs distinctly audible, soft, with their usual rhythm, free from all abnormal murmur—no increase of the vocal resonance. Repeated examination, especially in both sub-clavicular and supra-scapular regions, convinced me of this fact. The practitioner (W. T. Iliff, Jun., Esq., of Kennington), who had previously attended her, and who was again subsequently called in, informed me, however, that she herself had an impression, that, some time previously (in March), she was in the habit of spitting up fragments of her lungs. Mr. Iliff had taken portions of the indurated matter expectorated to Mr. Quekett, who, in fact, positively affirmed them to be pulmonary substance. At my request, Mr. Iliff was so good as to forward to Edinburgh a portion of the expectorated matter, discharged during the March previous to my seeing the patient—an oblong substance, about one-third of an inch long, and one-sixth of an inch in thickness, presented all the characters of a piece of lung infiltrated with tubercle. On examining sections of it, under a magnifying power of 250 diam. linear, I, with some difficulty (the structure having been preserved in alcohol), determined the existence of circular bundles of areolar and elastic tissue, obscured by a mass of molecular matter in which tubercle corpuscles were imbedded. That this tissue was really expectorated by Mrs. B., Mr. Iliff entertains no doubt, as he himself removed it from a tenacious mass of expectorated matter. Subsequent to our correspondence on the subject, he also submitted it to Dr. Beale, and Messrs. Quekett and Rainey, of London, all of whom agreed as to the fact of its being a portion of human lung.

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[1] Trans. of Pathog. Soc. of London, vol. vi. p. 74.

[2] Nederlandsch Lancet, 2 Sir. D. 1.

During the winter of 1854-5, Mrs. B. continued tolerably well, and without medical attendance. Mr. Iliff, however, was again called in on the 7th of April, and found that the disease had been slowly progressing. The expectoration was now increased, and more purulent, and she had sensibly lost flesh and strength. On the 25th of May, Dr. Latham was consulted. There was then flattening at the left apex, and in his opinion a cavity there. She had also hectic fever, copious night sweats, diarrhœa, haggard countenance, emaciation, in short, the usual symptoms of the advanced stage. From this time, notwithstanding the most judicious treatment on the part of her medical attendant, the disease progressed rapidly, and she expired, July 26th. An examination after death revealed extensive tubercular disease in both lungs, with cavities in their apices; the left side being the one most affected.

The facts of this case serve, in my opinion, to establish that there are instances in which the occurrence of disintegrated lung tissue may be detected by the microscope in the sputum *before* any auscultatory signs are audible. On this latter point, I may observe that Mr. Iliff could not detect such signs any more than myself, although he was in possession of the expectorated lung substance. There were also particular circumstances connected with my knowledge of the patient's friends, that made me unusually careful and anxious when making the stethoscopical examination; and certainly, in August, 1854, five months after the pulmonary tissue was evacuated, there were no aubible signs of phthisis pulmonalis. In reply to a question by me, as to how and when these signs first made their appearance, Mr. Iliff stated that he could not tell, as, for many months, he was not in attendance. But I need scarcely remark that, between August, 1854, and May, 1855, there was ample time for the disease to have progressed to the formation of cavities.

All the circumstances of this case, therefore, have impressed upon me the importance of a microscopic examination of sputum, whenever the symptoms, and a suspicion of phthisis pulmonalis exist, without any clear evidence being present derivable from auscultation.—*Edinburgh Med. Journ.*, Jan. 1856.

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23. *Case illustrating the Influence of Locality upon Asthma.*—M. Trousseau, in a clinical lecture reported in the *Gazette des Hôpitaux*, No. 34, 1853, relates the following striking example of the influence of locality upon asthma:—

"A young man, æt. 28, a native of St. Omer, was subject to repeated attacks of asthma while resident there. He went to London, and resided in *the City* for two years, and the whole of this time he was free from his malady. He afterwards returned to his native town, and in four days was as bad as ever. After bearing his troubles for three months, he went to Paris, to consult M. Trousseau, and in a short time was well. At this time he made a summer trip to Versailles, and there he was immediately attacked by his old enemy. He returned to Paris, and for six months continued free. After this, being obliged to return to St. Omer, he was again attacked so violently as to be thought to be dying. By Trousseau's advice, however, he was carried on a hand-barrow to the railway station, and brought again to Paris, where his sufferings once more terminated."

[We have known some equally remarkable examples of this. A gentleman of Baltimore, who was a great sufferer from asthma, went to Europe by the advice of his physician, in hopes of obtaining relief from the change of air. He remained abroad for three years, during which time he was entirely free from his old malady. The first night after his return home to Baltimore, he had a severe attack, and continued a sufferer so long as he lived.

Another gentleman, of Baltimore, who suffered severely from asthma, removed to Philadelphia, where his attacks were comparatively mild and infrequent. But whenever he visited Baltimore, as he occasionally did, to see his relatives, he severely suffered from his old enemy.—ED. AM. JOURNAL.]

24. *Treatment of Hæmoptysis.*—M. ARAN condemns the employment of bloodletting in the treatment of hæmoptysis, believing that it only temporarily arrests the bleeding, while it is dangerous from the debility and increased susceptibility to the intercurrent affections it gives rise to. He has for some time past been engaged in testing the efficacy of various hæmostatic agents employed in hæmoptysis; and in this paper he gives the results of his observations. He considers the essence of turpentine a most valuable remedy, given in doses of from 10 to 30 drops every hour, either in a spoonful of water, or mixed up with magnesia as a bolus. Marked amendment usually occurs in a few hours, and in from twenty-four to thirty-six hours the bleeding ceases. It is less suitable for young or plethoric subjects with febrile action, than in weak cachectic individuals, exhibiting atonic characteristics. Ergot of rye and ergotine are far less efficacious; but chloride of sodium, given in doses of 1 to 2½ drachms, proves very efficacious in some cases, and has the advantage of being always at hand. Among the astringents, tannin, and especially gallic acid, are to be recommended; the latter, while quite as efficacious, does not exert the same desiccating effect upon the tissues, or induce the obstinate constipation produced by tannin. As a mean dose, M. Aran gives 15 centigrammes (a centigramme is ⅙ grain) every hour or alternate hour. He has had little experience in the use of emetic and nauseating remedies; but in three cases in which veratrine was employed, the bleeding ceased as if by enchantment. This class of remedies, indeed, would deserve to stand in the first class of hæmostatic agents, were there not others possessing like efficacy, and yet not giving rise to the painful nausea these produce. M. Aran has derived great advantage from the combined use of digitalis and nitre. In ordinary cases, he gives in the twenty-four hours, 30 centigrammes of digitalis, and 1½ gramme (a gramme is 15 grains) of nitre, divided into four doses; but in very severe cases, these doses may be very much increased, so that the digitalis has been given to the extent of 1½ gramme, and the nitre to 4 grammes, without injuriously affecting the action of the heart, while the effect produced on the hemorrhage has been remarkable. Its arrest never, however, takes place so suddenly under the use of these medicines, as when turpentine or gallic acid is employed.

In abundant, but not immediately dangerous hemorrhage, we can choose among any of the above mentioned means. In extremely abundant hemorrhage, we must arrest the flow as speedily as possible, by agents which do not depress the powers of the economy too much, and which are not too slow in their operation. Neither ergot, acetate of lead, nor alum is sufficient to meet the danger. Turpentine, gallic acid, chloride of sodium, or nitre with digitalis can alone be trusted; but the necessity of increasing the dose with the intensity of the hemorrhage may, perhaps, render the chloride of sodium, and especially the nitre and digitalis, dangerous, through the possibility of the production of a too great depression of the heart's action. It is, therefore, to gallic acid or turpentine that we must chiefly trust in these severe cases; and we must not limit ourselves to their employment, but also endeavour to procure a temporary arrest of the hemorrhage by ligatures to the limbs and the application of ice to the chest, allowing the means employed internally to consolidate this temporary cure.—*Gaz. des Hôpitaux*, 1855, No. 94.

25. *Distinction between Miasmatic and Contagious Diseases, and their Geographical Relations.*—D. MUHRY, of Gottingen, has arrived at the following conclusions:—

1. *Miasmatic diseases* are specially dependent upon the influences of soil, humidity, temperature, and seasons, *like a vegetation.*

2. They generally manifest themselves and operate immediately after invasion, without any regular period of incubation—*like a poison.*

3. They may occur again and become chronic in the same individual, without any diminution of his susceptibility. (*Receptivitât.*)

4. They do not regenerate themselves in the human organism.

1. *Contagious diseases* manifest themselves quite independently of soil, and also (with some particular exceptions) of temperature and seasons.

2. The attack always occurs after a longer or shorter, but regular period of incubation.

3. They generally occur only once in the same individual; and if they return, it is after a long space of time.

4. They reproduce themselves solely in the human organism.

The relation of contagions to temperature, or the geographical distribution of such diseases, may be thus expressed. The majority of them are ubiquitous, *i. e.*, independent of temperature, and appearing in every zone of the world, irrespective of the period of the year. Examples of this truth are, variola, scarlatina, rubeola, pertussis, cynanche parotidea, aphthæ, puerperal metritis, erysipelas, hospital gangrene, and malignant pustule. Those, on the other hand, which are influenced by temperature and the seasons, are divisible into three classes:—

1. Those which are confined to high temperatures, and are common in the tropics—lepra, frambœsia, dysentery, and aphthæ.

2. Those which are most common in the temperate zones: Erysipelas, puerperal metritis, pertussis, and croup.

3. Those which are found in the regions between the tropical and polar zones: Plague and typhus.—*Edinburgh Med. Journ.*, Jan. 1856, from *Henle's Zeitsch. für Rationelle Medicine.* Bd. vi. heft. ii.

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26. *The Prophylactic and Curative Treatment of Continued Fevers.*—Dr. SEMPLE read a paper (Feb. 9th, 1856), on this subject before the Medical Society of London. He commenced by remarking upon the great diversity observed in the nature of fevers, although the prominent and essential features, namely, cold shivering, heat, and sweating, were the same in all cases. With regard to the proximate cause of fever, little was known with certainty, and perhaps the theory offered by Sydenham, which represented it as an inordinate commotion of the mass of the blood, on the change of that fluid into a new condition, was pretty nearly the same as that which is proposed in the present day; for modern physicians were now generally coming to the conclusion that fever is a blood disease, and that the "commotion" described by Sydenham is due to the introduction of some morbid matter, the exact nature of which, however, is not yet determined. In the present day there is a revival of the "humoral pathology" to a great extent; the belief that cancer and tuberculosis are blood diseases is fast gaining ground; and that cholera, scurvy, purpura, and albuminuria are of that nature, can hardly be doubted; and in the whole series of inflammatory diseases, the blood is unquestionably affected in the first instance. This view is not merely theoretical, but is of the highest practical utility; for by admitting that numerous diseases are generated by the introduction of subtle poisons into the system, our legislators would be induced to examine the conditions of the atmosphere, of food, and of climate, likely to produce injurious effects upon the animal economy, and would thus materially prevent epidemic disease. With regard to the special treatment of fever it could not be said that we possessed any one remedy which could positively cut short the disease; fever would run a certain course, and it is not possible to predict the exact length of time to which any given case would extend; but there was much reason to believe, although it could not be positively proved, that the duration of fevers was shortened by judicious treatment. The division of fevers by Cullen was shown to be inapplicable to the present forms of the disease; for the synocha of that author was rarely if ever met with in modern practice, although it no doubt existed even at the commencement of the present century. The division into typhus and typhoid fevers was far more in accordance with modern experience, and no one could

study the subject of fever on a large scale without being impressed with the accuracy of the distinctions drawn between the two. The opposition to this view of the division of fevers probably arose from limited observation; and further experience would tend only to strengthen the diagnosis which has been proposed. Admitting that in certain exceptional cases, the two fevers presented characters in common, and might cause some difficulty in distinguishing them, the leading features were sufficiently striking; the typhus being characterized by the abundant measly rash, the great tendency to delirium, the rapid sinking, the absence of abdominal disease; the typhoid, on the other hand, being marked by the scattered, evanescent, rose-coloured spots on the abdomen or chest, the less tendency to head symptoms, the insidious onset, the presence of disease in Peyer's patches, the frequency of diarrhœa, a blown condition of the abdomen, and gurgling in the iliac fossa. In reviewing the remedies employed in the general treatment of fever, blood letting, which was formerly so strongly recommended, was now contra-indicated, in consequence of the alteration which had taken place in the type of disease, although, so lately as 1830, bleeding was practised in fever with success. Putting the lancet out of the question, even leeches and the cupping-glasses must be used with great caution in modern practice; and it must be remembered that any mode of depletion was less easily borne by patients in a hospital than in private practice; because in the former, the lowering influence of the poisoned atmosphere affected the vital powers, and tended to produce collapse. Mercury, which was once extolled as a remedy in fever, possessed very little power over that disease, although in former years it may have been efficacious; and it was an error in modern practice to adhere to the routine custom of giving mercury in this and other diseases, when experience has shown that this mineral, indiscriminately employed, is more injurious than beneficial. Quinine, which is a very valuable remedy in intermittents and remittents, could not yet be said to be equally efficacious in continued fevers, at least not in cutting short that disease; and the treatment, by large and frequent doses of this alkaloid, had not been found so successful in other hands as in those of Dr. Dundas, who strongly recommended its employment in this manner. Dr. Semple did not consider this question as finally settled; but he placed great reliance upon the careful observations of Dr. Barclay and Dr. Peacock upon the subject. Purgatives were also injurious when carried to any length in the treatment of fever; for they always tended to produce depression, even if, as by irritating the inflamed bowel in typhoid fever, they were not positively mischievous. The mildest aperients should therefore be employed, and amongst the best of these were small doses of castor oil. Typhus and typhoid fevers, as they were different in their nature, required different methods of treatment. In the first, the tendency to depression must be combated by wine, brandy, carbonate of ammonia, and other cordials and stimulants, and to relieve the head symptoms the head should be shaved, and a blister applied to the nape of the neck; in the second, or typhoid fever, the necessity for stimulants at first is not so obvious; but the inflamed and irritated bowel should be an especial object of care, and constipation and diarrhœa, which may alternately prevail, must be met by appropriate treatment; the former by mild mercurials and alteratives; the latter by astringents, opium, and acetate of lead. The prophylactic treatment of fever was even more important than the curative, for when a fever was once established, its issue was doubtful, and its treatment difficult. Typhus fever was certainly the most contagious, while typhoid arose from local or endemic causes. The establishment of fever hospitals he (Dr. Semple) regarded rather as a necessary evil than as a positive good; they certainly diminished the danger of this disease in the localities from which the patients were drawn, but they spread it in the hospital itself; and probably the best hygienic treatment of fever was to isolate the patients, if that could be accomplished, by placing them in situations which were airy, clean, well ventilated, and remote from one another.—*Lancet*, Feb. 23, 1856.

27. *Treatment of Intermittents by Cinchonine.* By M. Hudellet, Physician to hospital at Bourg (Ain).—Living in a country where marsh fevers are endemic,

and attached to a hospital where ninety beds were under his care, of which beds the half were usually occupied by persons suffering from these fevers, M. Hudellet has had abundant opportunity of treating these maladies, and this opportunity has not been neglected. For more than twenty-five years, he tells us, he has tried all manner of remedies in the hope of finding some cheap substitute for quinine, and almost invariably with disappointment, until March, 1853, when he began to use cinchonine. Since this time quinine has been almost altogether supplanted. He gives from 30 to 40 centigrammes of the sulphate of cinchonine in solution, adding to the first three or four doses, from 10 to 20 drops of laudanum, and the result is that *out of* 507 *cases of intermittents of all kinds all were cured except* 9. This mode of treatment did not cause any disorder, either in the stomach, or in the head. Relapses were neither more nor less common than after quinine; and the spleen was affected in the same way, and to the same degree, as by quinine. Indeed, upon the whole, cinchonine was as effective a remedy as quinine, and therefore to be preferred, because cheaper. It is also as effective as a prophylactic.

It is difficult to reconcile these statements with other statements respecting cinchonine, but this is what M. Hudellet has to say.—*Ranking's Abstract*, vol. xxi.

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28. *Leucocythemia.*—The following interesting case of leucocythemia, well related by Dr. JAMES WALLACE (*Glasgow Medical Journal*, April, 1855), constitutes a valuable addition to the scanty literature of this disease.

"On the 27th of March, 1852, Helen Danahy, a mill-worker, presented herself for advice and treatment at the Dispensary of the Greenock Infirmary, where I obtained from her the following particulars: About two years previously, she received a kick on the left lumbar region, in which she had severe pain for six days; but she remained in a fair state of health for twelve months afterwards. She then, however, began to emaciate, and observed a swelling about midway between the floating ribs and Poupart's ligament on the left side. This has since been gradually increasing, and, within the last two months, been attended with occasional lancinating pain, aggravated on coughing or pressure. Seven months ago, she had an attack of acute dysentery, which has returned within the last eight days. She has resided in Greenock for the last seven years, but is a native of Derry. She is now thirty years of age, and has been a widow for two years. She has had no children, but menstruated regularly till May last, since which, however, the catamenia have been entirely absent. She has never had any fever of the intermittent type, nor been in any ague district. At present she is very anæmic, the sclerotics having a peculiar pearly appearance, and the diathesis being evidently strumous.

"She now complains of looseness of the bowels, attended with tormina and tenesmus (the dejecta containing slime and blood), and has pain, increased on pressure, in the epigastrium and right hypochondrium. A large swelling occupies the left side of the abdomen. Its anterior and inferior borders can be accurately felt, the former being a little to the left of, and parallel with, the linea alba, and the latter midway between the umbilicus and Poupart's ligament. It is smooth on the surface and along the margins (except at the antero-inferior angle, where it is deeply notched), and can be moved upwards, as well as from side to side. The patient complains of a dull pain, increased on pressure, throughout the whole of the tumour, particularly in its antero-inferior angle, the pain besides being occasionally lancinating. There is some fulness in the right hypochondrium, the hepatic dulness being appreciable ar far down as the umbilicus, but the margin of the liver cannot be made out. The rest of the abdomen is rather tympanitic; lungs clear; heart's sounds and impulse natural. *No enlargement of lymphatic glands.* Pulse 92, soft.

"Having already had under my observation a case of leucocythemia, in connection with hypertrophy of the spleen, which Professor Bennett has reported in his work on the subject, I naturally suspected that this patient might afford an instance of that pathological condition. To ascertain this, I drew from a vein about half an ounce of blood, and found that, about five minutes after abstraction, a creamy-looking substance floated to the top, but was again easily diffused by slight agitation. After standing for twenty-four hours, the serum, which appeared to be normal, separated from the crassamentum, which was firm and thick, and composed of two portions, an upper and a lower, the latter being of the ordinary hue and the former of a cream colour, and about one-third of the thickness of the whole clot. Under the microscope, the white clot was seen to be made up of large, white, faintly granular cells, immeshed in fibrine, and displaying, on the addition of acetic acid, one, two, or three nuclei with nucleoli. These were also scattered through the red portion of the clot, and bore to the coloured discs a proportion of about one to ten.

"The nature of the case having thus been established, I was extremely anxious that Danahy should become an in-patient of the infirmary. She was averse to this, however, and I had no alternative but to treat her in the out-department. Accordingly, after examining her urine, which presented nothing abnormal, I ordered her to be leeched on the epigastrium and right hypochondrium, and to take, every four hours, five grains of Dover's powder. This was followed, in five days, by chalk mixture with catechu and laudanum, under which, in a short time, the dysentery entirely abated. She was then put on the saccharine carbonate of iron, alternated with cod-liver oil three times a day, and desired to rub in iodine ointment over the tumour; but under this treatment she made no improvement, the report taken on the 30th of June being as follows: 'Cannot take the cod-liver oil. For the last three weeks, the legs have been œdematous and the face puffy, the urine being scanty, but otherwise normal. The tumour in the left side of the abdomen has somewhat increased, but is free from pain. There is still, however, some pain in the epigastrium. No fulness of the liver is perceptible, probably from the bulging on the left side of the abdomen. Feeling of fluctuation indistinct. Emaciation advancing. *Glands of neck enlarging.* Appetite weak; bowels regular; pulse 92. To have five grains of the citrate of iron and quinine three times a day.'

"At this stage of the case, I again abstracted a small quantity of blood, and sent a specimen of it to Dr. Robertson, of Edinburgh, who was kind enough, at the request of Professor Bennett, to analyze it for me, the results being as follows:—

Specific gravity of blood,	1.044		
Specific gravity of serum,	1.025		
Fibrine,	1.5		
Serous solids,	70.	organic,	64.4
		inorganic,	5.6
Globules,	79.		
Total solids,	150.5		
Water,	849.5		
	1000.		

"At the tame time, I again made a careful examination of the ordinary as well as the microscopical appearances presented by the blood. Complete separation of the serum took place in eight hours. It seemed normal as to quantity, but was rather turbid. The crassamentum was not so distinctly divided as formerly into two portions, a considerable number of whitish streaks running through the coloured part (which was of a dirty purple), in addition to a thin creamy-looking stratum, which lay on the upper surface, and was about one-fourth of the thickness of the whole clot. The white cells did not appear to have increased in quantity, but there was in addition a few free nuclei. Those of the perfect cells were clearly defined by the addition of acetic acid, and were single, double, tripartite, or quadruple; some, besides, being curved and irregular, and all rendered of a yellowish colour by the reagent.

"After this, the œdema of the legs increased, and the abdomen became so distended with fluid as to cause considerable oppression in breathing, for the relief of which the patient was at last prevailed on to come into the hospital, where, on the 21st of July, she was placed under the care of my colleague, Dr.

Fox. The treatment now consisted of hydragogue cathartics and diuretics, which were continued till the 6th of August, when pleuro-pneumonia supervened, the termination of the case being reported as follows in the journal of the ward:—

"'*August* 6*th*.—Yesterday, patient was in a pyrexial condition, and was suddenly seized to-day with a sharp pain in the right side of the chest. The pain is augmented on taking a long breath, and by pressure. Decubitus on the left side. Percussion of right lateral region dull, a distinct friction sound being audible in that situation. *Cupping to six ounces. Calomel and opium every four hours.*

"'7*th*.—Pain in side relieved. Friction sound still distinct.

"'8*th*.—Pain gone, but dulness exists on left side of chest. Dyspnœa great. Clammy sweats. Pulse small and rapid. *Half an ounce of gin every hour.*

"'9*th*.—Became delirious last night, and died this morning.'

"The body was inspected two days after death, when, with the assistance of Mr. Gemmil, the house surgeon, I made a note of the following particulars: The left pleural cavity contained thirteen ounces of turbid serum, the lower lobe of the left lung being in the stage of the gray hepatization, and invested with a thin layer of recently effused lymph, which also covered the diaphragmatic portion of the pleura. The right pleural cavity contained about two ounces of turbid serum, and the lower lobe of the right lung was in the stage of the red hepatization, a few patches of fresh lymph being attached here and there to the lower portion of its investing membrane. The pericardium contained seven and a half ounces of clear serum. The heart was normal, the left cavities being empty, and the right filled with very soft cream-coloured fibrine, which, in the venæ innominatæ, gradually merged into the red clot. The abdomen contained fifty ounces of clear serum. Old adhesions existed between the abdominal wall and the portion of the peritoneum covering the upper third of the spleen. This organ was very much enlarged, and occupied the left side of the abdomen, as indicated by the signs observed during life, a deep notch existing at the lower portion of its anterior border. It measured thirteen inches in length, eight in breadth, and five in thickness, and weighed six pounds, three ounces avoirdupois. The liver was also considerably enlarged, and rather pale in colour, its weight being six pounds, seven ounces. The cortical portion of the right kidney was rather vascular. The intestines were pale, and the glands of the mesentery, as well as those of the neck, groin, &c., were considerably enlarged. The other organs were healthy.

"*Microscopical Examination.*—The blood from the inferior vena cava and the venæ innominatæ was of a dirty purplish hue, and contained some soft cream-coloured clots, which exhibited the white cells (some of which were larger than others) entangled in great numbers, with a few free nuclei, in molecular fibrine, and having nuclei of various forms, similar to those observed in the blood abstracted on the 30th of June, but not becoming yellow on the addition of acetic acid. The proportion of white to coloured cells, in blood taken from different parts of the body, was about the same as that first noted, except in that from the splenic vein, in which there was a decided increase. In all the specimens of blood examined, there was seen a considerable number of small rhomboidal crystals of a yellowish colour, and soluble in acetic acid.[1]

"The pulp of the spleen exhibited, in addition to a few fusiform cells and an abundance of coloured discs, an immense number of small, round, delicately-granular cells (the *splenic* cells), a considerable quantity of the *white* cells, and a few large *oval* cells,[2] filled evidently with nuclei of the latter. The trabeculæ, in a section made by a Valentine's knife, were observed to be distinct, but no Malpighian bodies were visible. The lymphatic glands were soft, and yielded on section a turbid juice, which presented, in great abundance, oil globules, granules, free nuclei, and small delicate granular cells, with nuclei very indistinct, but more apparent on the addition of acetic acid. A small portion of the liver, squeezed between glasses, showed the hepatic cells with an indistinct outline, and loaded with oil globules."

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[1] These were evidently a species of that class of crystals called Hæmatoid, to which attention has recently been directed by Virchow, and other observers. Vide British and Foreign Med.-Chir. Review for January, 1853, p. 277, and for April, 1854, p. 541; also an elaborate article in the number for October, 1853, by E. H. Sieveking.

[2] For the significance of these, vide Bennett on Leucocythemia, section 7.

29. *Absence of the Septum between the Ventricles without Cyanosis.*—Dr. Wilson exhibited to the Medico-Chirurgical Society of Edinburgh (Dec. 5, 1855), the heart of a child, 14 months of age, which had died of pneumonia. It was considerably enlarged, and there was partial absence of the septum between the ventricles. The child had been weakly, and gave indications of imperfect nutrition; but there was no cyanosis, and no bruit had been observed to attend the action of the heart.

Dr. W. T. Gairdner remarked that the preparation illustrated a law, which had been observed by Dr. Stillé of America, that cyanosis only occurred in such cases when there was contraction of the pulmonary artery, as compared with the aorta, which did not exist in this case.

Dr. John Struthers mentioned a case which had come under his notice, which was an exception to the law alluded to by Dr. Gairdner.—*Edinburgh Med. Journ.*, Jan. 1856.

30. *On the Anti-Plethoric Effects of Alkaline Remedies.* By Dr. Guignard.—In 1854, Dr. Edouard Carrière published a pamphlet on the rational treatment of congestion and apoplexy by alkaline remedies, in which he endeavoured to show, from physiological considerations and from a case full of interest, that the tendency to cerebral congestion and apoplexy results chiefly from a diminution in the natural alkalinity of the blood—a diminution which itself most frequently follows the excessive use of animal food—and that the best remedy against the congestion, and that most likely to prevent the return of the hemorrhage, consists in the internal administration of alkalies, and particularly of the bicarbonate of soda. This view is corroborated by the progress of physiological chemistry. M. Mialhe has directly proved that alkalies possess in a high degree the property of liquefying the serum of the blood, and of thus removing the excess of plasticity which the diminution of alkalinity constantly produces in the fluid. M. Poiseuille has, moreover, established a fact which gives additional support to M. Carrière's opinion, viz: that the compounds classed by M. Mialhe among the liquefiers of the blood, such as acetate of ammonia and iodide of potassium, considerably increase the activity of the capillary circulation. We are not now speaking of inflammation, already treated with bicarbonate of soda both before and since the publication of M. Carrière's pamphlet (Lemaire, *Bulletin Général de Thérapeutique*, t. 45, p. 181, and *Union Médicale*, 1854, No. 73), nor of croup, in which it has lately been attempted to revive the alkaline treatment, but merely of the species of plethora which is connected with too thick a state of the blood. It is, in fact, solely of this affection that M. Guignard speaks in the note communicated to the Society of Medicine of Poitiers (meeting for the month of August, 1854). The author briefly reports the history of a man of apoplectic temperament, in whom bleedings and purgatives failed to remove the habitual condition of impending cerebral congestion, and who was much relieved by the daily administration of seven or eight grains of bicarbonate of soda. He states, moreover, that in other subjects equally predisposed to sanguineous congestions, the same plan of treatment enabled him to diminish the number of bleedings usually had recourse to.

These facts are not sufficient to enable us to judge definitively of the question submitted by the authors—namely, the direct influence of alkalies on cerebral congestion. When we recollect that this congestion and apoplexy itself are often connected with gastric derangements, and that for these derangements we have, in many cases, no better remedies than the alkalies, as M. Carrière particularly remarks, the question will suggest itself, if it is not indirectly, that is to say, by restoring the functions of the stomach, and independently of all fluidifying action, that alkalies remove cerebral symptoms. This question remains to be solved; but we may say with all certainty that if the action of alkalies on the cerebral circulation be direct, it takes place in the mode pointed out by M. Carrière, and not, as M. Guignard supposes, by dissolving, or preventing the formation of, cretaceous deposits in the arterial walls. We agree with one of the members of the society, M. Pingault, in considering this theory to be perfectly untenable; and it is, moreover, sufficient, in order to show how inapplicable it is in this particular case, to recollect that the subject on whom the anti-congestive effect of alkalies was most decided (M. Carrière's observation) was a young man. It is to be regretted that M. Guignard has not stated the age of the patients whose history he has given.—*Bull. de la Société de Méd. de Poitiers*, No. 24, 1855, and *Gaz. Hebdom.*, Nov. 9, 1855.

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31. *On the Prophylaxis of Cholera by some of the Vegetable and Mineral Acids.*—Mr. Tucker read a paper on this subject before the Epidemiological Society, Jan. 7th, 1856.—The author having alluded to the former paper read by him before the Society, in July, 1854, on the use of vegetable and mineral acids as prophylactic of diarrhœa, choleraic diarrhœa, cholera, and dysentery, stated that he purposed on the present occasion to treat more especially on the vegetable acids as preventative of diarrhœa, choleraic diarrhœa and cholera, and chiefly on the product of the apple, cider, and cider-vinegar, or cider when its first and second stages of fermentation were perfected; and that his object was to show that the former, and probably the latter, of these possessed prophylactic properties as regarded the diseases named. Mr. Tucker then alluded to certain facts and observations bearing on the subject which had been already published by accredited authors since the reading of his first paper, in July, 1854. To Dr. Aikin's work on Cholera, who stated "that certain acids exercised prophylactic powers as regarded cholera." To Dr. Headland's second edition of his work *On the Actions of Medicines in the System*, who states, at page 222, "It is possible that Asiatic cholera may be connected with a rapid and fatal degeneration of the blood, produced by some septic influence, and there seems to be much reason for supposing that those who are accustomed to the use of the vegetable acids as articles of diet, as in the cider districts of England, are rendered thereby less liable to the attack of this disease." The author quoted from a letter from Mr. Hingeston, of Brighton, published in the *Association Journal*, for June 29, 1855, who wrote *On the Probable Recurrence of Cholera*, in the summer of that year. "Indigestion," says Mr. Hingeston, "with heat at the præcordium is again complained of. It appears to me there is a want of acid in the blood, and that this form of dyspepsia is relievable by the vegetable acids, such as lemon-juice." Mr. Tucker stated, that in the pursuit of his object he had occasion to search for the opinions of authors who had written on the plague, a disease which Dr. Southwood Smith (in his Board of Health Reports) maintained, with that of yellow fever, was allied to cholera. Lemon-juice, vinegar, spirit or oil of vitriol were among those he (Mr. Tucker) found which were adopted by good authorities, both as preventive and remedial of plague, and stated that it had been remarked that when diarrhœa ensued in patients attacked by plague, death was almost certain, whereas costiveness was a favourable sign. After a few remarks on the juice of the lemon as a well-known antiscorbutic, and observing that its value as a protective of cholera had yet to be shown, as well as some other of the vegetable acids, the author quoted from Bernay's *Household Chemistry* as to the property of the apple as an article of diet, and another authority, at some length, which showed that the apple possessed as well medicinal properties, such as being a refrigerant, tonic, antiseptic, and antiscorbutic. The use made of apples as an article of food by the operatives of Cornwall, especially in 1801, a year of scarcity of articles of consumption, and by the French and Germans to the present day, was mentioned, and the author expressed an opinion that the apple was nearly as nourishing as bread, and more so than the potato. Mr. Tucker then confined his remarks to cider as a preventive of cholera, and quoted from a work by Dr. Brockelsby, entitled *Economical and Medical Observations*, in two parts, from the year 1758 to the year 1763 inclusive, the following passage: "The most experienced and judicious physician of the age, Dr. Huxham, has, with a

rate of benevolence only peculiar to great minds, disinterestedly laboured to persuade the Lords Commissioners of the Admiralty in Great Britain, that the use of good cider ought to be admitted in general throughout His Majesty's Navy, as a provision exceedingly conducive to the preservation of the health of the seamen, especially in long voyages." Dr. Brockelsby's testimony in favour of cider was also quoted by the author. Mr. Tucker then read some letters and other documents from medical gentlemen residing in Somersetshire, Devonshire, and Hereford, and from others who had resided in Devonshire, but who are now living in and near London. These correspondents bore testimony as to the value of good fermented cider, in a medicinal and dietetic point of view. It was stated that those who drank cider were free from attacks of cholera and severe diarrhœa, while the disease was raging around them, and that those who drank malt liquor were oftentimes attacked. The author then proved by quotations from the correspondents of the Provincial Association, that the cider districts had been remarkably exempt from the inroads of cholera; and, also, that in two cases occurring at Exeter, in 1832, where the patients were in a state of collapse from cholera, they were completely restored by being allowed to drink several quarts of cider. Mr. Hancock, of Wedmore, Somersetshire, had forwarded to Mr. Tucker two separate communications; the first was to the effect that he had attended in 1832, 53 cases of severe diarrhœa and cholera; that he was called to the majority of cholera cases, among the poor at Wedmore at that period, and that he did not remember a single instance of the fatal epidemic having occurred in the better classes of society, otherwise those who were in the habit of and had the means of procuring the beverage common to the locality—cider. The patients attended by Mr. Hancock, as stated by him, were chiefly females, who had not the means, directly or indirectly, of procuring cider. Mr. Hancock's second communication to the author, which he said arose out of a conversation which took place on the occasion of his visit at Wedmore, in August last, to the effect that four persons had died of cholera who were in the habit of drinking cider, were as follows: "I have at length made inquiries relative to the cases of cholera reported as having occurred at Godney, by Mr. W., and, strange to say, the facts bear you out in your doctrine to the very letter. There were five persons attacked within a circuit of three hundred yards—a father and son, who had been teetotallers for the last twenty years of their existence, and men who strictly carried out the doctrine of total abstinence from fermented liquors. Both fell victims to the plague in a few hours. Another man of the same faith also fatal. The fourth case was that of a confirmed drunkard, a 'cider-swiller,' and while in intense agonies from spasm, constantly calling out for cider. At last it was given to him. This man recovered, and is now living. The particular case brought forward by Mr. W., that of Mrs. W., who almost died in his presence, I have not been able as yet to fathom, from a little natural delicacy on the part of the relations to divulge the habits of the departed, yet I trust I shall be in a position ere long to ascertain the real facts of the case for you." The author then alluded to a communication from Dr. Varrentrapp, of Frankfort-on-the-Maine, to the Epidemiological Society, on cholera, which was read before the Society in August, 1854. In that communication, Dr. Varrentrapp stated, that several persons had died of cholera, after having partaken of "sweet cider" (before fermentation), and "sweet wines" (before fermentation). Mr. Tucker endeavoured to prove that the juices of apples, such as are used for making cider, (which are allowed to remain in heaps "to sweat," for some weeks before they are ground up for the press), was not then cider; that such juice or juices were not considered as cider until the first and vinous fermentation was perfected. The author mentioned that sweet wort, and sweet wines, so called, or the juice of the grape before the vinous fermentation was perfected, acted as powerful aperients, or drastics, as did the juices of apples, as named by Dr. Varrentrapp. He therefore contended that cider as a prophylactic of cholera could in no way be negatived, as some might imagine, who are not conversant with the beverage, or its mode of manufacture, and who might suppose that the apple-juice becomes cider as soon as expressed from the prepared apples.

The author concluded his paper with a few observations on cider-vinegar, or cider in its second stage of fermentation. A vote of thanks was accorded to Mr. Tucker, and it was resolved that a committee be formed, to pursue the question of the vegetable and mineral acids as prophylactic of cholera.—*Med. Times and Gazette*, Jan 26, 1856.

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32. *Connection between Bronzed Skin and Disease of the Supra-renal Capsules.*—Dr. Addison, the senior physician of Guy's Hospital, has recently added to the list of benefits which medical science had already received at his hands, by the publication of a monograph on the *Diseases of the Supra-renal Capsules.* In this work, Dr. Addison, as probably most of our readers are aware, advances the opinion, that destructive disease of these hitherto little regarded organs is attended by most serious constitutional mischief. His views—which are, indeed, the simple expression of his clinical experience, and are supported by eleven carefully narrated cases—may be concisely expressed as follows: 1. That a peculiar browning or bronzing of the skin is indicative of disease of the supra-renal capsules. 2. That it may depend on any disease which affects the disorganization of these bodies, *e. g.*, cancer, tubercle, abscess. 3. That patients suffering from this symptom fall gradually, and without obvious cause, into a peculiar form of debility, which results almost invariably in death within a limited period. 4. This form of debility is rarely attended by much emaciation, and the subject of it, although with much flabbiness of tissue, retains throughout a general bulkiness of frame which contrasts strongly with his extreme feebleness. 5. That usually, no other important visceral complication supervenes.

Should these conclusions prove to be correct, it will be seen that we have an important and well-characterized disease added to the nosological list. Here is a train of peculiar symptoms and events originating in a morbid state of an organ of the pathology of which, hitherto, nothing has been known, and whose functions, whatever they may be, have been deemed of but little importance. Dr. Addison's facts are as yet only eleven in number, and, although they all support the conclusions indicated, yet that they are not sufficient data to set at rest so important a question, few, we suspect, would be found more willing to admit than himself. It now rests with the profession at large to pursue the inquiry; and, should that be done with the same candour, zeal, and energy with which he has opened it, it will not be long before the requisite data are in existence. During the last few years, several cases have occurred in different metropolitan hospitals, having more or less similarity to those described, and these we now propose to group together. We shall pursue, in so doing, our usual method of first stating the facts, and at the end of the series endeavouring to sum up the conclusions derived from them, and to append such general comments as they may suggest.—*Med. Times and Gaz.*, Dec. 15, 1855.

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33. *Case of Bronzed Skin—Death—Autopsy—Abscess* (*tubercular*) *in each Supra-renal Capsule.*—The following case may, perhaps, be deemed almost a typical example of the disease. Excepting, perhaps, that the man was emaciated more than would appear to have been the case in Dr. Addison's patients, the symptoms noticed, and the conditions found at the autopsy, coincide pretty exactly with the observations of that physician. The colour of the man's skin was most marked, and led to a diagnosis as to the nature of the disease. Great interest was felt in the case, both by Dr. Burrows and the other medical officers of St. Bartholomew's, and the observations respecting the symptoms, &c. were very carefully verified. We take the account from the notes of Mr. Beard, Dr. Burrows's clinical clerk at the time:—

E. E., aged 24, admitted April 7, 1854. He is a single man, living in London, but accustomed to travel about the country in his occupation as a hawker. His family are stated to have been healthy, excepting that his mother is now ill. His father was killed by an accident. He is himself of mixed complexion, having light eyes, and almost black hair; his brothers and sisters, with one exception, are of fair complexion. In habits of diet he appears to have been regular, excepting in the use of spirits; beer he has never liked, but he has habitually taken nearly half a pint of gin daily. For four months past, being unable to work, he has been badly fed, but previously he was always able to procure sufficient food.

Present state.—He has the appearance of an ill-nourished man, being slightly emaciated. His skin is in all parts of a copper-bronzed tint, the head and neck being very deeply stained. On the thorax and upper part of the abdomen, the brown marks are interspersed with lighter patches, producing a mottled appearance. There are very dark patches in front of both patellæ, and the skin of the penis and scrotum is almost black. His back is the least deeply tinged of any part. On the back of the left thigh is a defined patch, an inch and a half across, which is very dark. The conjunctivæ are a little more vascular than natural, but quite free from tinge. The gums of the upper jaw are congested, and a little tender on the left side. Tongue moist and clean, excepting a central fur; appetite bad; bowels relaxed; thirst moderate; pulse 108, small and soft. He is the subject of angular curvature of the spine, from old disease. The sixth, seventh, and eighth dorsal vertebræ project backwards, and there is the scar of an abscess opposite the fifth lumbar. He complains that exertion causes pain in the lumbar region, which extends from the spine along the crests of the iliac bones. Has great pain across the loins in walking or sitting, but none when lying down. The abdomen is in all parts tolerant of pressure.

History of symptoms.—The change in the colour of the skin has been noticed by himself and friends for four months past, and it is steadily increasing. The disease of the spine first occurred when he was three years old, but about two years ago suppuration again took place, and a sinus continued open for about four months. He was laid off work for some time, on account of this abscess, but had recovered, and returned to his employment for at least six months before his present symptoms commenced. The pain across the back, from which he now suffers, began about eight months ago. Of late he has wasted much, and during the last week he has had more or less vomiting every day. The matters vomited are described as watery, and of a yellow colour.

Treatment, &c.—Dr. Burrows prescribed for him a draught, containing five grains of the ammonio-citrate of iron in infusion of calumbo, and ordered four ounces of wine daily, with such articles of diet as he could take. During the week that he was under observation no vomiting occurred, nor did he suffer from pain. The urine was repeatedly inspected, and was always abundant in quantity, of light straw colour, and free from sediment. During the first three days he was kept to bed, but afterwards, at his own request, was allowed to get up, and usually remained dressed in the ward for several hours at a time. His debility was a marked symptom. On the whole, he appeared to be improving, until the night of his death.

Mode of death.—On the 15th, in the afternoon, he had been up for some hours, and had conversed cheerfully with a brother who visited him. Towards evening he returned to bed, remarking that he felt exhausted, and not quite so well. His bowels not having acted, he obtained from the nurse a dose of house-medicine. Up to 1.30 in the night he slept well, but the dose then began to act freely, and between this and 7.30 he had a succession of seven fluid stools. At seven the nurse gave him a dose of aromatic mixture, after which no further purging occurred. At eight he was spoken to, and turned his head, but made no reply. The nurse finding him almost unconscious, at once sent for Mr. Wood, the resident medical officer, but before that gentleman arrived he was dead.

The *autopsy* was conducted by Mr. Turner, two days after death. Nothing unusual was noticed in the brain. The thymus gland was large, measuring three inches in length. The heart was contracted, especially on the right side. Its structure was firm, but there was an excess of fat on its exterior. One curtain of the mitral valve was slightly thickened, and some plates of partial ossification were beneath the lining membrane of the aorta. The lungs were healthy, and showed no excess of pigment. The bronchial tubes were in a normal state. The bronchial glands were dark, from pigment. The peritoneum was healthy. The liver was of natural size, and, excepting the presence of a few small, yellowish patches of deposit beneath its peritoneal investment, which extended about a third of an inch into its substance, it showed no departure from the healthy state. The spleen, pancreas, stomach, intestines, and bladder, were healthy. The mesenteric glands were rather larger than usual. The kidneys were swollen and congested, and their capsules easily stripped off. The bodies of the fifth and sixth dorsal vertebræ had been destroyed, and a partial anchylosis, permitting of some motion, existed. The spinal cord at this part was bent, to suit the angle, but was neither flattened nor compressed. There was no active disease in the bones, but over them lay a mass of enlarged glands, in the centre of one of which softening appeared to be commencing. *The supra-renal capsules.*—The right of these bodies was rather increased in size, and on making a longitudinal section of it, a purulent-looking fluid oozed out from several distinct portions of its interior. Bathed in this fluid were some hardish yellow bodies, the size of peas, much resembling in appearance concrete tubercular matter. These bodies, together with the fluid, were inclosed in a distinct capsule, which was lined by a well-defined membrane. The left capsule was not quite so large as the right, which, however, its condition on section precisely resembled. The bodies found in it were four or five in number, and one of them was as hard as cartilage. Both capsules felt before section soft to the finger, on account of the presence of the fluid within.—*Ibid.*

34. *New Treatment for Itch.*—MM. Dussard and Pillon assert that itch may be often cured immediately by painting the body over with chloruret of sulphur dissolved in sulphuret of carbon. The application kills the acari and their eggs. Sometimes it is necessary to repeat the application, as some of the acari, or some of their eggs, may not have been killed by the first.—*Gaz. Hebdom.* Oct. 26, 1856.

SURGICAL PATHOLOGY AND THERAPEUTICS, AND OPERATIVE SURGERY.

35. *Average Duration of Life in patients with Scirrhous Cancer of the Breast.*—In a lecture delivered at the College of Surgeons about four years ago, Mr. Paget stated that the average duration of cases of cancer of the breast, when the disease is left to itself, is thirteen months greater than of cases in which the diseased breast is removed by operation. Mr. P. finds that he has fallen in error in this estimate, and in a late number of the *Lancet* (Jan. 19, 1856), he publishes the results of his fuller investigations.

"Records which I have made or collected of 139 cases of scirrhous cancer of the breast, watched to their conclusions, or to their survivals beyond the average duration, give," he remarks, "the following results:—

"In 75 not submitted to operation, the average duration of life, after the patient's first observation of the disease, has been 48 months. In 64 submitted to operation, and surviving its immediate consequences, the corresponding average has been a little more than 52 months. The longest duration of life, in the former class, has been 216 months; in the latter class, 146; the shortest, in the former, was 7 months; in the latter, 7½.

"The proportionate number of the deaths[1] in each year, after the first observations of the disease, may be represented by the following table:—

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[1] With the deaths, I have included in this table the numbers of those who are still living beyond the average period. The omission of them would have made no difference in relation to the questions concerning the influence of the removal of the cancerous breast.

	With operation. Per cent.	Without operation. Per cent.
In the first year, there died	4.7	8
" second "	6.25	22.6
" third "	21.8	24.
" fourth "	14.	9.37
" fifth "	20.	7.3
" sixth "	11.	5.3
" seventh "	9.37	9.37
" eighth "	3.12	2.66
" years after the eighth	9.37	12.

"When the extremes of duration are so widely different as they are here shown to be, a perfectly reliable average cannot be obtained, unless the numbers of cases are, on both sides, larger than those supplied by my records.[1] I believe, therefore, that the results here stated are only near the truth, and that the collection of more cases will in some measure alter them.

"Thus, it is nearly certain that the averages stated above are, on both sides, rather too low, for twenty of the patients (*i. e.* one-seventh of the whole number) are, or were, still living, after having survived the average time of duration with the disease. Moreover, as cases of the longest duration are the most likely to be lost sight of before their record is completed, it will generally happen that a collection of cases will include a disproportionately large number of those of short duration. Allowing, however, for these causes of reduction in the calculated average durations of life, there appears no reason to expect that any number of completed and unselected cases will prove an average duration of more than five years from the first observation of the disease.

"The sources of error above referred to would, I think, especially reduce the estimate of the average duration of the cases in which no operation is performed; for unless cases are kept with an express intention of recording all that occur, without any selection whatever, there will be a tendency to omit a disproportionate number of those which are not made interesting, either by operations, or by some of those striking events which are most common in acute eases. Hence, the records will generally contain too few of the most chronic cases in which no operation has been performed. I have expressly avoided this error in my own note-books, by avoiding everything like a selection of cases for record; but I cannot be quite sure that the same rule has been observed in some of the records from which I have derived cases observed by others. I can find, however, no reason to believe that any full and accurate tables of cases will bring out, as a result, that patients in whom cancer of the breast is left to pursue its course, live longer, on an average, than those from whom it is removed. Rather, I believe that, if care be taken in the discrimination of the cases appropriate for the operation, and in the rejection of those that are unfit, there will appear a gradually increasing—though it may be always a small—advantage in favour of the cases in which the breast is removed. Probably it may be ascribed, in some measure, to such care, that the additional and continued cases, which I have tabulated in the last two years and a half, make the average duration in those operated on rather longer, and that in those not operated on rather shorter than it appeared in 1853.

"With regard to the rules that may be observed in the selection of the cases most fit for operation, I may refer to the published lecture; continued observations having only confirmed the statements made therein. I will only refer to one fact, which the table printed above shows—namely, that the proportion of deaths, in the first two years of the disease, is much less in those who are operated on than in those who are left; amounting in the former to less than eleven per cent., in the latter to more than thirty per cent. Such a result, while it justifies the operation in the cases of acute cancers which are not attended with evident cachexia, may be fairly set against the mortality from the operation itself, which I still believe to be not less than ten per cent.

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[1] I could have easily made the numbers larger by including doubtful, or only probable, cases of cancer of the breast, but tables so made up seem worse than useless.

36. *Ovariotomy; Tetanus during Recovery; Death.*—Mr. G. M. Humphry records (*Assoc. Med. Journ.*, Feb. 16, 1856) an interesting case of ovarian dropsy in which the operation was followed by tetanus and death. The subject of it was a delicate but apparently healthy woman, 27 years of age, the mother of three children. The abdomen was as large or larger than at the full term of pregnancy, and the tumour presenting every indication of not being adherent. Mr. Humphry operated on the 18th of July, 1855, in the following manner: "She was placed in a reclining posture at the foot of the bed, the legs hanging over. A catheter was introduced, to make sure that the bladder was empty. I made an incision, about three inches long, between the umbilicus and the pubes, through the linea alba into the abdomen. Allowing the bleeding to cease a little, I introduced my finger, and could find no adhesions. Then enlarged the wound to about four inches. The sac bulged into the wound, and I thrust a trocar into it. As the fluid escaped through the canula, the sac presented more and more through the wound; and, presently, during a fit of sickness, the whole was ejected from the abdomen, the parietes of the abdomen collapsing behind it so as to close up the wound and cover in the bowels, rendering very slight pressure sufficient to prevent their protrusion. The fluid continued to flow through the canula; and while the cyst was being emptied, its walls were supported to prevent any dragging. The pedicle was found to be three or four inches wide; a thick tough mass, which seemed to be the hypertrophied round ligament, lying at one edge, and the enlarged Fallopian tube at the other. Moreover, there were several masses near the pedicle, which felt like the uterus. To ascertain the nature of these, we cut open the sac, and found them to be composed of round clusters of secondary cysts growing into the interior of the sac from its wall. There was only one large sac; the depression which led us to suppose there might be more than one being caused by thickening of its wall, and by ridges projecting from it into the cavity. The pedicle was tied in three portions near to the sac (each ligature drawn as tight as I could), and cut through about a quarter of an inch from the ligatures. The end of the pedicle was allowed to remain in the wound, and secured to a roll of lint, so as to prevent its retiring into the abdomen. Some small bleeding vessels in the abdominal wall were secured. The wound was closed by means of sutures passed through the hinder part of the sheath of the rectus and linea alba, close to the peritoneum, and by others through the skin. A compress of lint was placed over the wound, and a flannel many-tailed bandage over the body. She vomited again during the latter part of the operation, and felt sick afterwards. In other respects, she was very comfortable, more so than before we began."[1]

On the 26th the patient was doing so well that Mr. H. took his leave; but on that day the patient experienced a little stiffness of her jaws, but supposing it to be from cold, she said nothing about it. The next day, however, the disease became marked, and although at no time were the spasms very violent, still she succumbed on the morning of the 29th.

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[1] The cyst was thick. Its interior was vascular, with numerous small creases and pits, caused probably by the sudden evacuation of the fluid. There were also several falciform bands in its interior, which had caused the furrows on the surface, and given us the impression of its being trilocular. Growing into it from the lower part, where the pedicle had been attached, were several cysts and cystic masses; also, thick tough bands and thin membranous septa, which were probably the remains of cysts that had burst. On the walls of the great cyst were also several round or oval holes, communicating with cavities extending under the lining of the cyst, and having smooth walls. These were also probably secondary cysts, which had burst through the orifices into the interior of the sac, and collapsed. They looked like ulcers in its wall.

The fluid of the large cyst was like thin coffee. It contained blood globules, abundant cholesterine scales, molecules, delicate granular cells, spherical and elongated. Also, coarsely granular cells or masses of various sizes, looking as if they were formed by the mere aggregation of molecules. The wall of the sac was in many places coated with a thin pellicle of soft brownish substance, with silvery glistening surface. This pellicle was composed, almost entirely, of cholesterine, with brownish molecular masses or cells, and molecules of light specific gravity. The smaller cysts contained a mere glutinous, transparent, pale fluid, with cholesterine scales and some delicate cells. The divided ends of several large arteries and veins were seen in the pedicle.

"On examination, we found the end of the pedicle (a little sloughy, of course, where the ligatures were applied) lying close behind the wound, which afforded a ready vent for any discharge. The immediately adjacent intestines were coated with a small quantity of reddish lymph. There were no other indications of peritonitis. The mesentery, drawn down to the wound, and adherent there, was healthy. The colon was generally rather distended, with points of contraction here and there, but no obstruction. The pedicle had consisted of the entire broad ligament, and was tied near to the uterus; the remaining portion was perfectly healthy, not even more vascular than usual. The uterus also was quite healthy. The right broad ligament was rather vascular, and the ovary was nearly twice its natural size, containing four small thin-walled vascular cysts, with watery fluid in their interior."

Mr. H. appends to this case the following interesting remarks:—

"Some years ago I studied the records of this subject carefully, and made an analysis of all, or nearly, the reported cases of the operation of ovariotomy, for the purpose of making up my mind as to the propriety of performing the operation, and of ascertaining whether, by a judicious selection of cases, more favourable results might not be obtained. I will briefly state the conclusions at which I then arrived.

"The number of instances of the operation that I collected were 105. Of these, in 50, or less than one-half, it was attended with success. In 39, or more than a third, it proved fatal. In 16 it was found impracticable, or useless. Such results are far from satisfactory. When we consider the nature of the disease, that it is not of immediate, nor even of certain, danger to life, and that the unrecorded cases are not likely to be more favourable than those I collected, we are, on the whole, compelled by these statistics to form no very favourable opinion of the past results of the operation.

"The operations appeared generally to have been conducted with much caution, and every attention had been paid to the means likely to insure success. The causes of death (peritonitis being the chief), and the mistakes in diagnosis, were likely to occur again; and it seemed to me that a diminished rate of mortality was to be expected for the future, only, or chiefly, from a more careful selection of cases, and of the kind of operation to be performed.

"I found that the age from 30 to 40 was by far the most favourable; the proportion of fatal results bearing a relation to the deviation above or below that period. The number of deaths above 45, amounting to 9 out of 13, being such as to discourage the attempt to remove an ovarian tumour after the patient has passed the middle age.

"The nature of the tumour was found to have a very marked influence on the result of the operation, as appears from the following table. In many of the cases it was not stated, or stated too vaguely for the information to be made use of.

	Recovered.	Died.
Simple cysts	16	6
Cysts with after-growths—multilocular cysts. Some described as cysts with solid matter; and two containing hair and teeth	13	9
Solid tumours, called fibrous, scirrhous, or solid or fluid, or solid with cysts	7	10

"The increase of the rate of mortality, in proportion to the solidity of the tumour, was very remarkable. When we add to this the facts, which were fully proved, that solid tumours are more likely to affect both ovaries, to be adherent,[1] to be associated with ascites; that they are, further, more difficult of diagnosis from tumours of other parts,[1] and are commonly of a slower growth, consequently less quickly fatal if left to themselves, there can, I think, be no question as to the propriety of refraining from any attempt to remove them.

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[1] Of the sixteen instances in which the operation was discontinued on account of extensive adhesions, the tumour is stated to have been solid in six; composed of multilocular or compound cysts in two; of simple cysts in three.

"Excluding the instances in which the tumour was solid, and the age of the patient about 45, the successful cases bore a proportion of somewhat more than two to one; an average which, I have no doubt, may, with cautious management, be expected in future, and which is, I think, sufficient to justify, and even to recommend the proceeding.

"With regard to the kind of operation, experience fully proves, what reason would suggest, that the danger is proportionate to the length of the incision. The major operation, as it is called, involving the exposure and handling of the bowels, with greater chances of hemorrhage, has been much more fatal than the minor, when the comparison is made between nearly similar cases. Indeed, if the small incision, that is, an incision of three or four inches, will suffice, and if, by evacuating the contents with the aid of a trocar, the cyst or cysts can be withdrawn, and the pedicle tied, there can be no reason for extending the wound.

"The question of the liability of both ovaries to be the seat of disease is a very important one in estimating the value of an operation for the removal of one; and it is much to be regretted that this had not been more frequently borne in mind by those who have given the descriptions of the *post-mortem* examinations. From the collation of a great many cases, I found that, though both ovaries were liable to be affected with solid growths, and with those numerous small cysts which so often form about the periphery of the gland, yet that the large cysts, the multilocular cysts, and the cysts with after-growths, were, in by far the greater number of instances, confined to one organ. If, therefore, a cure be effected, there would seem to be every probability of its being permanent. I do not remember to have read of any case in which the disease manifested itself in the other ovary after one had been removed; though it is quite possible that such cases have occurred. In several instances, the catamenia are reported to have returned regularly; the patients continuing to enjoy good health, and some have borne children. In my own patient, it has been stated, there were several small cysts in the remaining ovary; but it is by no means clear that these were of the same nature as that of the large sac removed, or that they would ever have attained to great size."

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37. *Tracheotomy in Croup and other Inflammatory Affections.—The Medical Times and Gaz.*, Jan. 26th, contains some highly interesting and useful practical remarks on this subject, by Henry Smith, Esq., surgeon to the Westminster General Dispensary.

"The two main obstacles," he remarks, "to success after tracheotomy in croup are, undoubtedly, the existence of inflammatory exudation into the trachea and bronchi below the situation of the artificial opening, together with a congested state of the lungs, in the first place; and secondly, the delay in operating; and it is a point worthy of consideration, whether the first objection may not to a certain extent, be removed by obviating the second, in fact by proceeding to an operation at an earlier period, before the suffocating stage of croup has fairly set in. It is only reasonable and consonant with our pathological knowledge, to suppose that the unfavourable state of the lungs so often found after death, results from the obstruction higher up, and that these organs are rendered the more unfit for duty, in proportion as the disease advances, for it is found after death that in some cases, only one of the inferior lobes is congested or inflamed, whilst in others, when the disease has been more severe and has lasted longer, the greater portion of both lungs may be affected. It is reasonable to suppose that an earlier introduction of air, through an artificial opening, might prevent this, and thus give a larger proportion of cures.

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[1] In each of the seven cases in which the tumour was found not to be ovarian upon opening the abdomen, it is stated to have been solid. Of these five died, one recovered, and in one the tumour, a fibrous growth from the uterus, was successfully removed.

"But here we are at once presented with a serious difficulty, the too conscientious appreciation of which may cause all the difference as to the results of the operation in England and in France. It is impossible to decide, except in the very last stage of croup, whether the patient will die or not; almost every practitioner must have met with some remarkable cases of recovery where a fatal result looked imminent, and this is the reason why trachetomy is not used at an earlier period of the disease. Only a very few weeks ago, I was requested by Dr. Maurice Davis to give my opinion as to the probability of tracheotomy being required in the case of a young girl who had been suddenly seized with the most acute inflammation of the windpipe. I saw her at a period when the disease was at its height, when the distress was great, the sharp shrill inspiration as well marked as I ever heard it, and where remedies had not had much effect. After consultation the remark was made, that this was a case where, perhaps, to do it any justice the operation of tracheotomy should be performed at once, but at the same time the case was not so bad as not to leave scope for milder measures; the lungs were not much congested, and the general condition of the patient did not correspond with the obstruction in the windpipe; it was decided that the remedies employed, leeches, counter-irritation, and calomel, should be further continued; in a few hours amendment began, and the child recovered. Now if the operation had been done here, the patient would probably have recovered, but we have the certain proof that in this case, at least, it was not required.

"Professor Trousseau has pointedly insisted upon the necessity of not delaying tracheotomy until it is too late, when in fact the little patient is suffering, not only from the mere distress of dyspnœa, but from the general depression induced by extreme obstruction to the breathing, and by the disorder of which, it may be, this is only a complication; hence it is to be inferred that he operates much earlier than practitioners in this country, for generally it is not until the patient's condition is such as has been referred to, that we feel ourselves warranted in resorting to a measure which, in itself, may hasten death, and only promises a doubtful success.

"The operation of tracheotomy in a child, is frequently talked of as though it were one of easy performance, and one devoid of danger; but the number of casualties which have happened during the operation in the hands of experienced surgeons, proves that this is a fallacy. It has fallen to my lot to perform tracheotomy many times in children, varying in their age from eleven months to six years, and this repeated experience has convinced me that it may be one of the most trying and difficult the surgeon has to perform. It is true that in every instance I have laboured under the greatest disadvantages, several operations having been done on great emergency at night time; others, in dark rooms or kitchens, with but little assistance; but still it is for the most part under such disadvantages that we are called on to do tracheomoty, and difficulty should constitute an element in the calculation, as to the operation being warrantable or not.

"The paper just published by M. Trousseau, valuable and instructive as it is, concerning the mode of performing tracheotomy, the necessary precautions, the minutiæ of the process and the after-treatment, is deficient in one point, and that the most important, viz: as to the pathological conditions of the disease for which the remedy is proposed. He only shortly mentions the nature of the malady, speaking of it merely as croup, and using the term 'diphtheritic infection;' it is to be regretted that the actual pathology of the disease so termed, was not distinctly pointed out, and it is to be hoped that this want may be supplied in a future communication from the pen of this distinguished physician.

"There is good reason, in the absence of this information, to believe that there is a distinction between the croup in England and in France, for in the majority of cases of the inflammatory disorder in this country, the trachea in its entire length is involved, and partially obstructed by a false membrane more or less dense, whilst in France, it appears that the species of croup termed *dipthérite*, and occasionally met with here, frequently attacks children. I have seen one or two well-marked instances following measles; on one occasion I opened the windpipe, on another it was my intention to do so, but the patient died from a sudden attack of dyspnœa before assistance could be brought; in neither of these cases was the trachea affected in any way, but a false membrane was observed in patches on the larynx, fauces, and tongue. It is in such instances, that tacheotomy performed sufficiently early, is not only justifiable, but will probably be successful, and if the cases referred to by M. Trousseau are of the same nature, the reason of the wonderful success of his operations is in a great measure explained.

"Dr. West, in his *Lectures on the Diseases of Children*, has dwelt upon this difference in the pathology of the disease, in the two countries, and has, I suspect correctly, explained the success of the operation in the hands of MM. Bretonneau and Trousseau, by stating that 'in France, croupal symptoms are, in the majority of cases, induced by the extension to the larynx of false membrane, originally deposited on the fauces and soft palate, while the windpipe itself is comparatively seldom in a state of active inflammation, often altogether unaffected; and the bronchitis and pneumonia which, in this country, so often and so seriously complicate the disease, are there of less common occurrence.'[1]

"Although in the several cases of true inflammatory croup, for which I have undertaken tracheotomy, the results have been very unsuccessful, the effect of the operation in two cases of another form of inflammatory disease of the throat in children, has been more encouraging, and has led to the supposition, that life may be not unfrequently saved by it. I allude to that condition which is sometimes seen after an attack of scarlet fever, when the glands of the neck become greatly swollen, or the fauces, tonsils, and larynx are affected with a violent inflammation, going on to ulceration and sloughing. These attacks are sometimes seen to occur in a child who has not the specific eruption of scarlet fever upon the skin, during the prevalence of an epidemic, or the throat symptoms become more fully developed after the patient has passed through the acute stage of the disorder. Three such cases have been under my observation in private practice.

"The first was in a little boy, aged 4, who went through the acute stage of scarlet fever favourably: at the termination of this violent engorgement of the issues of the neck, suddenly, within a few hours, took place, great difficulty both in respiration and deglutition was experienced, and tracheotomy was suggested, but the parents did not seem to wish it, and the symptoms continuing, the child rapidly died.

"The second case was as follows: At 9 P. M., on January 2, 1855, Mr. Watson, of Southampton, requested me to visit with him a little girl, aged 4, who was dying from obstruction to the respiration.

"When I saw her she was almost in the last stage of collapse, the dyspnœa was most distressingly urgent, the face and neck were livid, the lips blue, the external jugular veins were enormously distended, the inspiration was accompanied by a loud and shrill noise, the pulse was almost imperceptible, and death was evidently close at hand. The interior of the throat was in a very bad state, the tonsils were greatly swollen, and with the soft palate, were in an ulcerated and sloughing condition.

"Mr. Watson informed me that the patient had been labouring under scarlet fever for about two weeks: during the course of the disease the throat symptoms were prominent, but had become much more marked as the eruptive stage had declined; for three days previous the dyspnœa had been very severe, but the extreme urgency had existed about six hours.

"Tracheotomy was suggested to the parents, but the case was so unpromising that I hoped they would not accede to it; in fact, I told them that the child might die during the operation, and I felt that if any difficulty arose in all probability death would happen. They wished it to be done. Accordingly, assisted by Mr. Watson, I operated at once, fortunately opening the trachea in a few moments, and without wounding any distended vein; the relief given was extraordinary, the child breathed with ease, sat up and took nourishment, although before, the difficulty of swallowing was excessive; the countenance became natural, and she fell asleep.

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[1] West on Childhood. Page 232.

"On the following day the relief continued, and was more marked when a clean double canula was introduced. The child took nourishment well, a strong solution of nitrate of silver was applied by means of a brush to the throat, and she was sedulously watched.

"The relief to the breathing continued for some days, but great care was required to keep the canula unobstructed, by frequent removal and cleansing; the condition of the throat materially improved under the local application of nitrate of silver, and strong stimulants internally. On the morning of the fifth day, the little girl was sitting up in bed, playing with her doll, and although the tongue had become covered with aphthæ, strong hopes were entertained that she would yet recover. Unfortunately, however, an attack of capillary bronchitis suddenly set in, and destroyed the patient on the morning of the eighth day. I regret to state that no *post-mortem* examination was made, therefore, much of the value of this case is lost; but the result of this operation was very encouraging: here was a child who had been reduced by a serious attack of scarlet fever, to an extremely weak condition, suddenly brought to death's door by obstructed breathing, and yet life is prolonged for nearly a week by tracheotomy, performed under desperate circumstances. The fatal termination was the result of an accident, it may be said, for the sudden attack of bronchitis was due to the immediate contact of cold air with the lungs, and I have reason to believe that this might have been prevented; the weather for the time of the year was very close, and the nurse and parents were constantly in the room watching the child, the apartment consequently became somewhat foul, and I requested them to open a window for a short time; my impression is that the entrance of the cold air may have caused the mischief to the lungs.

"The result of this case, however, determined me not to hesitate to adopt the operation, if a similar opportunity should offer itself; none such occurred until the 30th of November last, when Mr. Lloyd, of Great Russell Street, called me up at midnight to see a little girl, aged 5, who was suffering from urgent dyspnœa.

"On my arrival, I found the child lying in its nurse's arms, breathing with great difficulty; its countenance was pale and somewhat livid, but there was not that great lividity of face, or blueness of the lips, which is the accompaniment of extreme obstruction to respiration: the difficulty in swallowing had been almost insurmountable, the child scarcely taking anything; on looking into the mouth, the tonsils and the uvula were seen to be enormously swollen and ulcerated.

"It appears that this little girl had been somewhat suddenly seized with feverish symptoms and mischief about the throat and neck five days previously; the symptoms rapidly increased, and, notwithstanding most persevering and judicious treatment, the obstruction to breathing continued, and within the last few hours had much increased in severity; there was not any eruption of scarlet fever on the skin, but it was supposed that the child was suffering from the poison.

"On a careful consideration of all the circumstances of this case, I could not quite make up my mind whether the symptoms were not due as much to want of nutrition, in consequence of the difficulty of swallowing, as to obstructed respiration; and it was determined that Dr. Theophilus Thompson should be called into consultation, and that the question as to operation should be decided by him. This gentleman, after having carefully examined the patient, gave it as his opinion, that she was suffering mainly from obstructed respiration, that the lungs were healthy, and that the operation gave the only chance of life. I accordingly performed it, some trouble was experienced in introducing the tube, and for a short time the patient appeared to be in a critical condition; however, she soon rallied, having lost but little blood, and in a short time the relief that was given was most extraordinary, the chest expanded well, the air was heard entering it, freely and softly; the little girl swallowed nourishment at once, and fell into a sound sleep; after she awoke she sat up, took milk and water, eagerly holding the mug in her own hands; and I left the house two hours after the operation, with the most hopeful feeling.

"Early in the morning, however, of next day, she had a sudden change, became very restless, jumped out of bed, and then fell into a semi-comatose state. I immediately removed the tube, and found it partially blocked by mucus; it was cleaned and re-introduced, and soon after the appearance of the patient was remarkably altered for the better.

"She continued in this improved state until evening, when she became very depressed, although she took nourishment with avidity, and continued in this state until eleven at night, when she died.

"We were fortunate in obtaining a *post-mortem* examination, when we found that the lungs were in a very healthy condition, as diagnosed by Dr. Thompson, the only exception being a congested state of the posterior part of the lower lobe, on the left side.

"On taking out the whole respiratory canal, we found the base of the tongue and tonsils in a very bad condition, the latter were very large and ulcerated, and the uvula formed a prominent obstruction between them. On laying open the larynx and trachea, the parts about the entrance into the former were so changed by ulceration, that neither the vocal cords nor the ventricles of the larynx could be appreciated.

"The trachea itself was intensely inflamed, and a dense false membrane extended beyond the bifurcation.

"The great point in this case was the healthy state of the lungs, and it was that which warranted the surgeon in performing tracheotomy. From the extreme rapidity of the attack, and from the very great depression of the vital powers, owing to the impossibility of administering more than a very small quantity of nourishment for some days, the child was in an unfavourable state for the operation; the free admission of air, however, gave extraordinary relief, and had the disease been confined to the fauces and upper part of the larynx, recovery would probably have ensued; but, although the lungs were in such a healthy condition, the existence of false membrane in the trachea complicated the case very much, and probably frustrated our efforts to save life.

"We had strongly hoped that there was was not any false membrane excreted, as in the instance of ordinary croup, seeing that the case in many points presented the same features which obtained in those patients who are attacked during, or subsequent to, the course of scarlet fever; the *post-mortem* evidence proves that, even in those instances when the disease is more fully developed at, and is apparently confined to, the fauces and entrance of the air-passages, the trachea itself may be lined with an inflammatory deposit. If, however, it be clearly ascertained that the lungs are sound, that the morbid appearances are fully developed about the fauces, and death from obstructed respiration be imminent, I would not hesitate to resort to tracheotomy, and even if one life out of ten, or one out of twenty be saved, the surgeon will have his reward."

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38. *Tapping the Pericardium and Injecting it with Iodine.*—M. Aran has lately communicated to the Academy of Medicine of Paris, a case of chronic pericarditis, in which he several times tapped the pericardium, and injected it with iodine, with apparent success.

The subject of the case was a man about 24 years of age, of feeble constitution, who in the latter end of 1854 had had pleurisy of the left side. A month after the termination of that attack he was affected with pain in the region of the third or fourth false rib of the left side, slight oppression, and palpitation of the heart when working. These symptoms spontaneously disappeared during the fine weather. Towards the middle of the succeeding July, he was attacked with "fievre céphalique," extreme lassitude, and above all, with pain below the left nipple, palpitations of the heart and dyspnœa.

July 27. Symptoms of pericarditis manifest; febrile excitement intense; lancinating pain in front over the fourth and fifth left intercostal space, increased by pressure; acute sensibility to compression in the epigastrium; precordial dulness considerably augmented, extending over a space measuring

12 centimetres[1] vertically, and 14 transversely; impulse of the heart very obscure—its sounds feeble and distant. Diarrhœa, which had existed eight days, and a suspicious state of the lungs, forbade the idea of general detraction of blood. Six scarified cups were applied to the affected side—the succeeding day, calomel was administered in small doses, and mercurial frictions were applied over the anterior region of the chest with the view of hastening ptyalism. Two flying blisters (*vésicatoires volants*) were applied in succession over the precordial region. Notwithstanding these applications, effusion increased, and three days after the pulse was feeble, irregular, unequal, and extremely frequent.

August 7. Augmentation of the general and local symptoms, suffocation imminent. The extent of the precordial dulness is increased two centimetres transversely; complete obscuration of the sounds and impulse of the heart exists; the liver is displaced from above downwards.

The failure of the various means of relief applied up to this time, induced M. Aran to resort to puncturing the pericardium. Rejecting the operating procedures of MM. Riolan and Larrey, he adopted that erroneously attributed to Senac, consisting in penetrating the cavity of the pericardium, between the fourth and fifth intercostal spaces, with a capillary trocar, rather than, by using the common trocar, risk wounding the heart, and producing mortal hemorrhage. The operator also adopted the following precautions: By percussion, the circumference of the pericardium was circumscribed by a series of concentric lines, starting from different points of the chest, and stopping at the heart, and the part where dulness existed designated with care. The attempt was then made to limit the zone, within which the silence of the sounds of the heart was complete, that where they began to appear, and that where they were very clearly heard. These sounds, which were completely absent in the inferior portion of the dull part, reappeared, yet feeble and distant, in the fourth intercostal space, leaving then a zone of sufficient extent within which the trocar could be plunged from before backwards, without running the risk of impinging upon the heart. To be fully assured, a point was chosen for the operation in the fifth intercostal space, two or three centimetres from the extreme limit of the dulness, on the level of which an incision was made through the skin with a lancet, and thrusting the trocar in slowly, says M. Aran, I soon arrived (after having once introduced the stylet without seeing any fluid flow) within the pericardium, the jerking flow of the liquid, at the instant, leaving no doubt in this regard.

Eight hundred and fifty grammes[2] of reddish-coloured serum were withdrawn by the trocar. The fluid first flowed in jets, then in a stream, the patient aiding its evacuation by prolonged respiratory efforts, so marked was the relief it afforded him. Percussion showed that the line of dulness descended as the fluid flowed, and auscultation allowed the beats of the heart to be perceived more and more clearly, without any friction sound; the pulse itself became more distinct, more regular, and less frequent, descending from 120 per minute to 96.

Sustained by the success of the measure in pleurisy, M. A. practised with precaution in this case the injection of iodine, streaming into the pericardium a mixture of 50 grammes of tincture of iodine, with 50 grammes of distilled water, and 1 gramme of iodide of potash. The introduction of this was not even felt by the patient. After retaining it several minutes in the cavity, several grammes of the fluid were permitted to flow out—the wound was then closed by graduated compresses and bandage.

On the 19th of August, twelve days after the first operation, a second was required, which gave issue to 1,350 grammes (more than 42 fluidounces) of a very albuminous, greenish fluid, resembling bile in colour. The injection was now repeated, containing 4 grammes of iodide of potash, almost the entire of it being left in the pericardium. The efforts made by the patient to aid the evacuation of the morbid fluid, determined the admission of a quantity of air into the serous cavity, as manifested by *bruit de goargouillement*, or *de clapotement*, described by M. Bricheteau, and by tympanic sonoriety in the precordial region. These phenomena disappeared in a few hours, but the effusion began to reaccumulate on the evening of the day of operation. Up to the 21st of August, the dulness increased. On the 22d, it remained stationary; and by the end of the 23d, it commenced diminishing. Soon the bruits began to be perceived, although feeble, at the apex of the heart; and by the 28th of August, the dulness did not extend beyond the median line in bruit, the nipple on the outer side, and the third rib superiorly.

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[1] Centimetre—4.72 English lines.

[2] The French is equal to 15.434 grains Troy.

In proportion as the affection appeared to subside on the side of the heart, signs of tuberculosis of the lung became more and more evident, chiefly in the left side, where the signs of inflammation had been first noticed.

Towards the end of September, œdema of the lower extremities was noticed, which did not become general. Since the end of October, there has been return of strength and appetite, and amendment of the thoracic symptoms and of the general health. M. Aran expressed the hope that this case, which established the safety of injecting solutions of iodine into the pericardium, would encourage physicians to practise an operation which was called in to save the life of the patient, who without must inevitably have perished.

The editor of the *Gazette Médicale*, in a recent number (Dec. 1), severely criticises this case. He asks whether the author of the paper (who belongs, he says, to a school which piques itself on great strictness in the observation of facts) has been sufficiently strict in the interpretation of facts in this case? The pericardium was twice tapped and twice filled again, in spite of iodine injections; then blisters are used, which possess an old reputation for promoting the absorption of similar effusions, and no hesitation is felt in ascribing to the iodine injections the benefit which most certainly was derived from the blisters!

This "little irregularity of reasoning," it is added, will not help to recommend the practice adopted.

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39. *Gunshot Wound through the Shoulder-joint; Excision of the Head of the Humerus; Recovery, with hinge-like movement of the Articulation.*—Great praise is due to modern surgeons for the efforts made by them to avoid amputations of limbs, and to replace this formidable measure by resections and excisions. This approbation was originally founded upon the belief that the milder course of procedure was extremely likely (judging from a few examples, and from the laws of repair in the human organism) to be attended with favourable results; and we have now good reason to hold our opinion more and more strongly, as the numerous successful cases which it has been our privilege to report, are a sufficient guarantee of the soundness of the practice to which we have alluded. It cannot, however, be concealed that failures have been recorded, but these should not make us fainthearted, for the ratio of successful cases is considerably in favour of resection. From the numerous operations of this kind which we have seen, we are inclined to think, that amongst the principal causes of ill-success are, the state of debility and exhaustion to which patients are often reduced after long-continued diseases of joints, and the scrofulous diathesis with which most of the sufferers are affected. Hence we are led to view the case which we shall this day bring before our readers as extremely valuable, because the operation was performed upon a man of average health, and not suffering from a strumous taint. As injuries of the shoulder by rifle-balls are certainly not rare in the present contest, we gladly put Dr. Beith's case upon record; for it may reasonably be expected that other surgeons, either in the army or navy, will, under similar circumstances, adopt the same plan of practice.

Thomas K——, belonging to Her Majesty's ship *Conflict*, a man about forty years of age, when engaged in the boats with the enemy in the Gulf of Riga, on the 1st of October, was wounded in the left shoulder by a rifle-ball. The projectile traversed the deltoid about an inch below the acromion, passed upwards and backwards under the outer end of the clavicle, making a wound of exit through the skin and integuments of the back near the posterior superior angle of the scapula. The patient reached the ship about an hour after being hit; clots had formed in both wounds, while there was a slight venous hemorrhage, mixed with synovia, flowing from the aperture in front. This soon ceased on application of a compress. There was no pain on motion in the shoulder, so that the joint seemed to have escaped; but the man complained of constant and fixed uneasiness in the inner and back part of the arm, with pain on pressure over the outer end of the clavicle. The ball, which was picked up in the boat, was indented with adhering spiculæ of bone, and the wound was treated with simple applications till the patient was sent for further treatment on board the hospital ship Belleisle.

On admission, Dr. Beith found the wound caused by the entrance of the ball still a well-defined circular opening, about half an inch in diameter, situated as just described. A probe could be directed backwards, inwards, and upwards for about two inches, apparently into the head of the humerus, amongst fragments of broken bone. The wound of exit, which was of an oblong shape, lay over the supra-spinous fossa of the scapula near its posterior superior angle, and was sufficiently large to admit the point of the index finger. There was considerable swelling of the soft parts around the joint. The patient had no power over the injured humerus; his pulse was quick and feeble. He was ordered wine and middle diet, and to be kept as quiet as possible.

Third day after admission.—Sleeps very well at night; no pain now in the shoulder except on movement of the joint; the swelling is not abated, and there is considerable discharge; no loose bone detected, though the probe passes freely through the head of the humerus under the acromion and along the supra-spinous fossa into the supra-spinatus muscle. It is still doubtful whether the glenoid cavity or any portion of the scapula be injured. Pulse 100, soft and full; skin warm and moist; appetite middling. Ordered quinine, and to go on with the wine.

Seventh day.—The swelling has been lessening during the last three or four days, and the wounds are looking healthy; the aperture of exit not inclined to heal, like the wound of entrance; constitutional disturbance trifling. To continue the quinine and wine.

Eleventh day.—Shoulder little if at all swollen; discharge from the wound offensive and ill-conditioned, with occasional flow of what seems synovial fluid.

Thirteenth day.—Considerable irritative fever, especially towards evening.

Fifteenth day.—The patient complains to-day of gnawing pain in the shoulder; the discharge is still profuse, and becomes more offensive; matter seems collecting at the anterior margin of the axilla; profuse discharge through the wounds; pulse 100, still of good strength; appetite good; night-sweats; expression of countenance anxious; matter has formed over the outer and posterior aspect of the joint, and fluctuation is distinct about the centre of the deltoid.

A consultation was held on board, at which it was agreed that excision of the head of the humerus should be performed, as offering the best chance of saving the limb and rescuing the man's life.

It has been very justly remarked by a recent and graphic writer on the surgery of the late war, that "if the surgeon does not cut off the arm or head of the bone, long continued suppuration will cut off the patient." As little of the shaft of the humerus as possible should, however, be removed, in order not to injure the circumflex arteries; and a very cardinal point to be observed is, to take away all portions of the cancellated structure that seem involved in the injury, while the tendons of the long and short head of the biceps should be spared if possible. Velpeau gives 13 deaths from this operation, while a German writer (Paul), who has published the latest statistics, records, in 84 resections of the humerus, 23 deaths; and, in 470 cases of amputation of the arm, the large proportion of 157 deaths.

Nov. 1. (Eighteen days after admission.)—The patient was placed under the influence of chloroform to-day, for the second time, as some difficulty was experienced on one of the two preceding days in bringing him into a state of anæsthesia. A short crescentic flap was then cut in the deltoid, commencing over the coracoid process and ending a little behind and below the acromion, this direction differing somewhat, perhaps, from the more ordinary angular section or flap. By this mode of operation, and by a little further manipulation, the head of the bone was readily disarticulated, and then removed by the common saw, as in the mode described in a former *Mirror* (vol. ii. 1855, p. 169). The ball was found to have entered the head of the humerus, at the bicipital groove; it had fractured the upper part of the articular surface of the bone, in its course through the joint, splitting the head of the bone as far down as its surgical neck.

The articular cartilage of the glenoid cavity was found to be destroyed by ulcerative absorption, but the bone had otherwise escaped uninjured; the acromion and clavicle were also entire, and a small portion was all that remained of the articular cartilage of the head of the humerus. Very little blood was lost during the operation, and only one small vessel required ligature. The edges of the wound were brought into apposition by sutures and adhesive plaster, cold water dressings were applied, and the man removed to bed. He was ordered a full dose of Battley's solution, and to be kept as quiet as possible. Middle diet, with wine.

The patient progressed very favourably, and union by the first intention was visible in part of the wound three days after the operation. On the ninth day, a slough separated from the cavity of the wound; and on the tenth, an erysipelatous blush was noticed round the shoulder, extending towards the sound scapula, and the cervical region. Twenty drops of tincture of the sesquichloride of iron were given every second hour. On the twelfth day the blush had disappeared; and on the fourteenth the patient was transferred to the Naval Hospital Ship at Plymouth.

Up to January 1, 1856 (two months after the operation), the patient went on improving; the wound, at that date, was all but healed, and the man likely to have a useful hand and arm. There was no inconsiderable amount of hinge-like movement in the shoulder, which movement promises to become still more extensive when the man is able to move about more freely.

Feb. 14. Dr. Dunn, under whose kind and skilful treatment the patient has been since his discharge to Plymouth Hospital, writes us that "the case is progressing most favourably, and bids fair to end in a very useful arm." He also states that, since last report, "an abscess formed under the line of incision, through which two small semicircular portions of the exfoliated edges of the humerus have escaped. This abscess is healing rapidly, and the motion and contour of the arm are improving daily."

The main question suggested by this case is, whether the patient was likely to recover with partial or complete anchylosis of the joint without any operative interference. Perhaps he might; but as there were before him two contigencies of the most fearful kind; amputation at the shoulder-joint, or death by irritation or exhaustion, it was plainly the surgeon's duty to use such means as would hold out a good chance of saving both life and arm. It will be perceived that some difficulty was experienced in bringing the patient under the influence of chloroform. This circumstance has been observed by other military and naval surgeons; and soldiers, more especially, are found very unsusceptible of the effects of the anæsthetic agent after the excitement of the field of battle.

We stated, in our introductory remarks, that the present case derived its interest from the previous good condition of the patient; and we may now add, that Stromeyer and Esmarch (the latest authorities on resection after battle) mention, out of forty cases of resection in the upper extremity, thirty-two in whom useful limbs were preserved.—*Lancet*, Feb. 23, 1856.

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40. *Gunshot Wounds of the Skull.*—A very interesting and practical statement has been recently made by STROMEYER, as to his experiences of gunshot wounds of the skull. He says that during three years he attended hospitals in Vienna, London, and Paris, during the times of Astley Cooper, he did not meet a single case in which the operation of trephining the skull had been successfully resorted to; while many severe wounds of the skull came under his observation which recovered without any operation. This weighed on his

mind, till the chances of war placed recently a set of eight cases of gunshot fractures of the skull, with marked depression of bone, under his care, and all with brain symptoms—*the whole eight recovered by being let alone;* and notwithstanding the time-honoured legends of Cooper, Dease, and Brodie, he is now satisfied this is the best practice! The plan he lays most value on is neither expectant nor operative, but, singularly enough, antiphlogistic, more particularly bleeding, if necessary, to anticipate inflammation of the membranes. Sir George Ballingall gives sixteen cases of wounds of skull which recovered quite unexpectedly after Talavera, by what he called "cold applications;" but Stromeyer says they recovered because Sir George was then flying before the enemy, and had not time to use his trephine. Stromeyer thinks, from what he has seen, that the chief danger consists in allowing atmospheric air to act on the brain substance, as it at once sets up a sort of decomposition or sloughing process, much more formidable than the "signs of compression" dwelt on by Astley Cooper, and that by using the trephine, we go, as it were, into the very jaws of death.—*Dublin Med. Press,* Jan. 30, 1856.

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41. *Ununited Fracture of the Humerus cured by Resection.*—By James Spence, Esq., surgeon to the Royal Infirmary. On the 11th November, 1852, A. Johnston, æt. 22, had his arm caught in a threshing-mill, by which the humerus was broken at two points; there was one fracture two inches below the surgical neck of the bone, and another at the junction of the middle and inferior thirds of the bone. He was seen by Mr. Falconer, of Loanhead, who adjusted the fractures, and put up the limb in pasteboard splints. I saw him in the begining of February, 1853, at the request of Mr. Falconer, as the lower fracture had not united. On examining the arm, I found the upper fracture firmly united; the lower one, however, was quite movable, but there was no overlapping of the ends of the bone, nor any deformity when the limb hung by the side.

As the injury was comparatively recent, I advised a further trial of the splints, with pads, so as to keep the parts in accurate contact, the use of nutritious diet, and exercise in the open air. This plan was persisted in till the end of March, 1853, when I again examined the arm. There was no attempt at union, and the ends of the bone were felt as if atrophied. I tried to excite action by introducing, by subcutaneous puncture, a strong sharp needle, or rather narrow knife, down to and between the ends of the bone, so as to break up the fibrous structure between them, and to scrape their surfaces. The splints were then carefully reapplied, and the arm firmly supported. At the end of six weeks, I found that no change had been produced.

In September, 1853, I passed a seton between the ends of the bones, and retained it for some days, till suppuration occurred; but even this gave rise to very little local excitement, scarcely any inflammatory swelling supervening. What little there was passed off very quickly on the seton's being withdrawn, and no benefit resulted from its use.

I had previously proposed resection of the ends of the bone, but at the same time thought it right to explain that it was attended with more risk than the methods hitherto adopted, and the young man's friends were at first opposed to its performance. After some months had passed, however, the patient was so anxious to give it a trial that his friends consented, and I performed the operation in April, 1854.

I made a longitudinal incision on the outer side of the arm, about three inches in length, it centre corresponding to the seat of fracture. The arm was then bent at the false joint, so as to render prominent the ends of the bone, and the incision was carried down to them. I had determined to separate the bone as little as possible from the surrounding parts, and therefore merely cleared the lower end of the upper portion sufficiently to enable me to saw through about half its thickness, and completed the section with a pair of strong bone-pliers. I then did the same to the end of the lower fragment, and snipped off some irregular portions. There was very little bleeding, and no vessel required ligature. The incision was closed with four points of suture, dry lint applied, and the arm placed in a rectangular splint, so adjusted as to allow the wound to be dressed without moving the limb. No constitutional disturbance followed the operation; the pulse never rose above 80, he suffered almost no pain, and the wound united entirely by the first intention. Indeed, so little swelling or irritation appeared at first, that I was afraid this operation also would fail; but at the end of ten days there was firm limited swelling at the seat of fracture, and the patient stated that he felt the sensation of constant pricking pains in the part. At the end of six weeks from the operation, there was hard swelling, involving the ends of the fractured bone, and it seemed firmly consolidated. I therefore sent him home to the country, but directed him to keep on the splints for some time.

I saw him him several times, and I allowed him gradually to use the arm; but, in November, 1854, I found that, from using too much liberty with the arm, it had bent considerably at the united part, showing that it had not quite consolidated. I, therefore, fractured it fairly across, and readjusted it. This was attended with more pain and swelling than had yet occurred after any operation; but in two months afterwards, when I removed the splints, I found firm osseous union, and he can now use the arm with perfect freedom.

In reviewing the case just related, there are two points which, I think, deserve attention: First, the causes which originally prevented osseous union; and, secondly, the plans of treatment adopted.

The causes generally mentioned as leading to want of union in fractures, are either some state of the constitution debilitating the reparative powers, or some error in the treatment, such as mal-adjustment of the broken bones, too early movement of, or too much interference with the injured limb. Occasionally, also, the interposition of some portion of muscular tissue between the ends of the fracture prevents firm union.

In this case, there was nothing in the treatment which could have led to want of union; the parts had been well adjusted, and accurately retained in position, and there was neither shortening, overlapping of the ends of the bone, nor any other deformity, when I first saw him.

As regards constitutional causes, he stated his health to be good; but he was rather pale, and suffered occasionally from dyspepsia, apparently depending on an inveterate habit of smoking; whilst the small amount of local or general excitement caused by any of the operations performed on the arm, would argue a want of energy in the vital powers unfavourable to repair. Still, there was nothing so marked in the state of his general health as sufficiently to account for failure of union, and I think it is to the nature of the local injury, in this case, that we must look for the explanation.

It will be observed that the humerus was broken across at two points, and that the fracture was the result of direct violence, of a kind likely to inflict great injury on the surrounding soft parts. The upper fracture united readily and completely; but the very consolidation at that part would diminish the free circulation through the medullary Haversian structure, and, consequently, impair the vitality of the portion of the shaft between the two fractured points, whilst the bruising of the soft textures would be likely to impede the periosteal supply of nutrition, and thus the lower fracture would be placed in most unfavourable circumstances for union.

Secondly, as regards the treatment, the simpler measures at first adopted proved quite inefficacious, apparently producing scarcely any local excitement whatever. In deciding on resection of the ends of the fractured bone, I determined to remove no more than the rounded and atrophied ends, and to do so with as little disturbance of the parts immediately surrounding the bone as possible. Having observed, in some cases which had come under my notice, where resection had failed, that fully two inches, or even more, had been removed, it always seemed to me, that not only the amount of bone thus removed, but also the great denudation required to effect its removal, was sufficient to account for the failure, besides increasing the risk of severe constitutional disturbance. Hence, I adopted the plan described, by which I was enabled, by using the bone-pliers, to complete the section without insulating the humerus, except the mere portion to be removed; whilst the bone so divided would more closely approach to the condition of fracture than if fairly divided by the saw.

The result fully answered my expectations, for there was scarcely a trace of constitutional irritation, whilst the incision healed by the first intention. At the same time, we must bear in mind that the patient seemed peculiarly unexcitable, as shown by the results of the former operations with the needle and seton. The osseous union was felt to be firm; but he had used the arm too soon and too freely, probably before complete ossification had take place throughout its thickness, and so the bending had occurred. This, however, was scarcely to be regretted, for it led me to fracture it again to obviate deformity, after which the deposit of new bone was much greater than at first after the resection.—*Edinburgh Med. Journ.*, Nov. 1855.

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42. *New Method of Treating Fractures.*—Mr. Winchester read a paper on this subject to the Harveian Society, February 7th, 1856.

The object of this paper was to establish a fixed principle for the guidance of the surgeon in the treatment of fractures, the want of which, the author considers, has been the cause of all the uncertainty, anxiety, and failure hitherto existing. Surgeons should not be content with partial, but should aim at complete success, or the perfect restoration of the limb to its normal state. So varied are the limbs of different individuals, that unless the splints themselves have the power of being adjusted to the peculiarities of each case, it is impossible to preserve the natural form. The two halves of the body being symmetrical, the one can be used as a guide to the other. The inspection of the sound limb is of great value as a means of diagnosis, and if so, how much more valuable, in a practical point of view, to be enabled to model a sound or healthy limb, and to use such model as a support to the injured or diseased one. The length by admeasurement alone is no positive criterion, neither is the knowledge of form conveyed by the eye simply of much use, unless we can so regulate the apparatus as to preserve such form. The length, to be correct, must depend upon the curve of the limb; for as a curved line between two fixed points is longer than a straight one between the same two points, so the making a curved limb straight must either lengthen such limb (cases of this sort have occurred), or else admit of a certain amount of displacement, whereby the same length may exist between the same two points. It is as easy to preserve the natural form of a limb, whether the fracture be simple, compound, or comminuted, as it is to allow it to assume, or by improper instruments to give it (and this is the direct tendency of all the ordinary forms of apparatus), an unnatural one. Immediate reduction should be practised, as a saving of time and suffering to the patient. Screws for the purpose of extension should be discountenanced, not only as unscientific and barbarous, but as unnecessary and injurious. Extension and counter-extension must co-exist, and therefore permanent extension must be injurious from the pressure on the points of resistance, and any stretching beyond what is natural fatigues the muscles, irritates the patient, and impedes union. Retention, then, is the point of the greatest importance. The apparatus, having the natural form given to it, as above alluded to, affords perfect support throughout the entire shaft of the bone, supplying that resistance externally of which the muscles have been deprived internally, preventing their contraction, and consequently avoiding displacement. The adoption of the above principle affords a degree of confidence, precision, and certainty, unattainable by any other means. By the exact position which it insures and preserves, the physiological relations and functions of the part are restored, absorption and deposition go on more readily, the patient's suffering is greatly diminished, and nature, having only to repair, does her work speedily and perfectly. One point of great importance in fractures of the leg, but which has hitherto been entirely neglected, is that of allowing the apparatus to move freely with the limb, whatever its motions. Splints are fixed either by a crossbar at the bottom, or by screwing or tying it to the bedstead. The result of this is that the lower or separated portion of the limb becomes one with the splint, and therefore immovable, rendering the seat of fracture the axis of motion, which in all cases retards, and in some even prevents union altogether. In fractures of the thigh, however, in the upper portion of it, where there is not room above to secure it to the splint, so as to allow of motion from the hip-joint, it becomes necessary to fix that joint by securing the splint to the pelvis, in order to prevent the natural tendency to eversion, and a crossbar at the bottom would facilitate it, or prevent lateral motion; at the same time, freedom of longitudinal motion should be permitted, or else, in oblique fractures, overlapping would be the inevitable consequence. The starched apparatus was objected to as an early application, inasmuch as, according to the present method of applying it, exact position cannot be preserved, and its retentive power is equal for a bad as a good position. The plan recommended, in order to obtain the best results from its uses, was to apply it with many-tailed bandages. By this means, the limb remaining at rest during its application, the causes of displacement are avoided, and the process simplified (lateral, of moistened pasteboard or folded linen, being of course used), an ordinary assistant being alone necessary, and the temporary artificial support having the natural form given to it, as above described, such form would be preserved during the drying of the starch. The best time for its application is from the fourteenth to the twenty-first day, when, all swelling having subsided, exact position can be ascertained. The author exhibited the various forms of lateral and posterior apparatus he has invented to carry out the above principle, some of which have already been described in the *Lancet.* He stated, also, that in practice the instruments had realized his most sanguine expectations. All the cases in which they have been used terminated successfully, and in an unusually short space of time, fully proving the correctness of the principle, that the nearer the parts are placed in their natural position, the less the time required for restoration. All the patients expressed themselves grateful for the ease and comfort afforded them by their use.—*Lancet*, March 1, 1856.

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43. *Luxation of the Femur upwards on the Dorsum of the Ilium reduced by Reid's method.*—This case was communicated to the Surgical Society of Ireland by Mr. M. H. Stapleton. A boy, aged six years, was admitted into Jervis Street Hospital on the 29th of August, 1855, at 1 P. M., having sustained an injury of the hip-joint on the previous evening. All that could be learned as to the manner in which the accident occurred was, that the boy, whilst climbing a large wooden gate, suddenly fell backwards to the ground, the gate (which was unattached by hinges or otherwise) at the same time giving way and falling over him. His mother states that she found him in this situation, and having extricated him from his dangerous position, she had him at once conveyed to a neighbouring practitioner. At this time he complained of severe pain immediately above the patella. No attention, however, was directed to the principal seat of injury, though the usual symptoms of this dislocation were well marked, the mother being merely desired to stupe the knee, to relieve the pain complained of in this situation.

On examination, the following day, when brought to the hospital, the following were the appearances presented: The injured limb was shortened by the entire length of the patella, the thigh was slightly flexed, and the knee inclined inwards, the ball of the great toe resting on the tarsus of the opposite side. The trochanter major was approximated to the anterior superior spinous process of the ilium, and was also less prominent than that of the sound limb. The natural roundness of the hip had disappeared. Any attempt to rotate the foot outwards was attended with the most acute pain. There was a slight mark of abrasion on the skin below the knee. When the boy was left undisturbed, the only pain complained of was that referred to a point above the knee.

From the presence of these symptoms, Mr. William H. Hozier, the resident pupil, was enabled to pronounce the case to be one of dislocation upwards on the dorsum of the ilium.

The surgeons of the hospital were summoned without delay, and the child having been placed under the influence of chloroform, Mr. Stapleton having obtained Mr. Ellis's permission (whose case it was) to try Mr. Reid's plan before the usual method of reducing such dislocations, proceeded as follows: The leg was bent upon the thigh, and the thigh flexed upon the pelvis, until the knee nearly touched the abdomen, when the knee was abducted and rotated outwards, when reduction was immediately accomplished and a snap distinctly heard by those near the spot. My attention was first drawn to this procedure by reading a case recorded in the *Medical Times and Gazette,* June 18, 1855, in which it proved successful under Mr. Cock, of Guy's Hospital, but in which no mention is made of the original inventors or proposers of this procedure. In the number for the 18th of July, the *Medical Press* enlightens us on that subject in an abstract taken from some American journal, and there we find Dr. W. Reid, of Rochester, New York, published a paper on Feb. 3d, 1852, in the *Transactions* of the Medical Society of the State of New York, which society had held its annual meeting at Albany. But as regards priority of invention, we have Dr. Fischer, of Cologne, who published in *Casper's Wochenschrift* in the number for November, 1849. His method of reducing dislocations of the hip consists in flexing the femur on the trunk, and making rotation of the limb conjointly with abduction or adduction, as the head of the bone may be situated one or the other side of the acetabulum; and we also find in one of the New York journals for 1855, a Dr. Mayer spoken of as having made use of this procedure of Dr. Fischer without being aware of Dr. F.'s published statement.

It may be advanced by some that this method can only be employed when the patient is under the influence of chloroform; but this is not the case, as is proved by a case given in the *American Journal* for October, 1855, in which reduction was accomplished by this method without the use of chloroform. Wattman, Kleuge, Rust, and Colombat have proposed methods of replacement, in which, by diminution of the muscular contraction, a less outlay of power is required than in those in more general use.

To those curious on the subject for the particulars of the procedures of Wattmann, Kleuge, Rust, and Colombat, will find them in Chelius's work on Surgery.

It was well known that when patients were taken by surprise, dislocations were often reduced with the greatest ease. Some years ago a girl was brought into Jervis Street Hospital, having fallen into the hold of a vessel and dislocated her hip-joint. At the time of the accident, as well as at the time of her admission, she was in a state of complete intoxication. She was to be placed under the care of the late Mr. Kirby, and he with others being anxious to examine the limb, took her out of bed, and supported her in the erect position. Hearing that Mr. Kirby was coming upstairs, and supposing he would not like his case to be meddled with, they were anxious to get her into bed, and to their great surprise while raising her up for that purpose the bone slipped back into its place, as he (Dr. S.) supposed at the time it was owing to muscular relaxation from intoxication; but on reflecting on the case when made aware of Reid's method, he came to the conclusion, that the reduction was due to the fact of the thigh being flexed on the chest during the movement into the bed, and that the removal of the hand from under the knee rotated it outwards.

The President said it was a good many years since he brought under the notice of that Society a case of dislocation of the hip-joint, reduced by Colombat's method, and he confessed that, in principle, he could see no difference between that method and the one since proposed by Reid. There was indeed a slight difference in manipulation, but as regarded principle, the two methods were exactly the same. Colombat's method had been but seldom practised, as far as he knew; but speaking from his own experience of the facility with which dislocations of the femur could be reduced by Colombat's method, and referring also to a case which he saw in the practice of Dr. Hargrave, he could hardly conceive a more simple or compendious method could be desired by any person. The only difference he could see between the two methods was this—viz: in the American method, the patient was placed on the back, while in the French method the position was altered.

Dr. Power stated that in Mr. Stapleton's case, all the muscles were perfectly flaccid, and he was astonished at the entire absence of anything like resistance on the part of the patient. In all his experience, he never saw a dislocation into such an anomalous position, as regarded the limb, reduced so readily and in so short a space of time. In fact, while they were looking at the case, and hardly expecting any immediate result, the limb was suddenly restored to its natural place; nor did it even require the evidence of his eyesight to convince him of that fact, for his ears told him plainly that the dislocation had been reduced.—*Dublin Medical Press*, Feb. 13, 1856.

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44. *Dressing of Stumps under Water.*—M. LANGENBECK, of Berlin, has, for some time past, been in the habit of placing stumps in zinc boxes filled with warm water; and it is stated that some of the unpleasant sequelæ of extensive wounds are, by this kind of dressing under water, completely avoided. M. Valette, surgeon to the Charité Hospital of Lyons, considers that this method owes its success to the fact that the wound is protected from the action of atmospheric air, the analogy being drawn from the phenomena attending subcutaneous solutions of continuity. M. Valette leaves the stump a fortnight or twenty days under cold water—an infusion of aromatic plants in which some alum is dissolved. Pus is, in this manner, coagulated and thrown down. He thinks that the present method is calculated to prevent purulent absorption; symptomatic fever is much slighter than by the ordinary method of dressing, and pain is considerably less. M. Langenbeck is on the point of using caoutchouc bags instead of zinc boxes; the bags are connected with two tubes, one bringing the water from a pail placed on a shaft, the other acting as a waste-pipe. A continuous current may be established at will, and keeps the part perfectly free from any accumulated secretions. This latter method is certainly worth trying.—*Lancet*, March 1, 1856.

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45. *Aneurism of the Left Internal Carotid Artery within the Cranium, diagnosed during life, and successfully treated by Ligature of the Left Common Carotid Artery.*—Mr. R. W. COE, Surgeon to the Bristol General Hospital, relates the following remarkable example of this:—

"In the middle of November 1851, I was requested by my friend Dr. Swayne to see a woman (Hannah Wray) with him, whom he supposed to be suffering from aneurism of one of the arteries of the head. She gave me the following history:—

She was 55 years old, married, and had been in good health up to five months previous to the time of my seeing her, when she had had a very angry altercation with her husband; blows passed between them, she receiving some on her head; during the quarrel she worked herself into a most violent passion, and at the same time greatly exerted herself by lifting some very heavy weights. Within five minutes after these occurrences—in fact, as soon as she recovered a little from the excitement—she complained to a neighbour of an extraordinary sensation (a buzzing and beating noise) in the head, such as she had never before experienced, and which noise, she now tells me, has continued without a moment's cessation from that time to this (from June to November 1851).

She likens the buzzing, as she calls it, in her head to the puffing of a steam engine—'whish, whish, whish'—and says that she hears it more distinctly with the left than the right ear, and that it is accompanied by a continuous sound like low thunder, emanating apparently from, and heard most distinctly at a spot situated near the posterior superior angle of the right parietal bone.

Since these symptoms came on, she has been unable to lie down in bed, and has been obliged to sleep in the sitting posture; and though always in the habit of dreaming, yet the dreams now are become of the most frightful character, disturbing her rest, and causing her to wake in an agony of terror.

On examination, no abnormal sound could be heard in the heart or great vessels; but on reaching the region of the neck, a very loud aneurismal bruit, synchronous with the pulse, was at once perceptible; it could be traced to the head, and heard distinctly over its whole surface, but most loudly over the left petrous bone; pressure on the right common carotid had not any influence over the sound, but when exercised on the left, caused it to cease immediately; though, after a time, she herself can hear a faint murmur, even whilst the pressure is continued, and that to the perfect prevention of the passage of blood through the artery. On listening very attentively with the stethoscope over the right carotid, the beat of that vessel could be distinctly separated from the bruit, which was also less loud on this than on the left side. There was a very trifling difference between the appearance of the two eyes, which I found to depend on a very slight squint inwards of the left eye, and a habit she had of winking with it. This peculiarity in the eyes came on subsequent to the buzzing in the head. She said she did not see so well with the left as the right eye; but the difference, if any, was very slight: she, however, always used the right eye for ordinary vision. On making her look at an object with both eyes, she saw two images, one by the side of the other; but they were not equally distinct: on closing the left eye, the less distinct image vanished. She herself was not aware of the slight strabismus, merely imagining that the left eye was rather the weaker of the two, and believing that she either winked or placed her hand before it simply for the purpose of guarding and saving it. She could, when she willed, abduct the left eye nearly as well as the right.

Her hearing was not affected; but the noise in the head was so great as to overcome even the sound of the rolling of the carriages in the street, unless attention was strongly directed to them. No tumour could be detected after a careful examination both of the external parts of the head and neck, as also of the nasal, buccal, and pharyngeal cavities.

My diagnosis was aneurism of the left internal carotid, as it enters the cavernous sinus, immediately after its emergence from the petrous portion of the temporal bone. I remarked, that I should consider the diagnosis perfectly verified in case of recovery, if the following phenomena should occur after ligature of the left common carotid: first, of course, if the bruit ceased; then, and more especially, if the strabismus in the left eye should quickly almost suddenly increase, until it showed that the paralysis of the external rectus muscle was nearly entire; and if, eventually, it were followed by slow but gradual recovery of the power of the muscle, as the patient regained her usual health: in other words, if the strabismus should eventually be recovered from.

Dec. 11, 1851, 11 A. M. The patient being under the influence of chloroform, I tied the left common carotid artery; Mr. Morgan, Dr. Swayne, and Mr. Henry Swayne, being present. The only peculiarity in the operation was, that, in consequence of the enormous distension of the anterior and external jugular veins, and of the branches connecting them, I was obliged to make but a small incision, and that not exactly in the ordinary position. On ligaturing the vessel, the rush at once ceased; but in a very short period it was succeeded by a very soft, almost continuous murmur, perceptible by applying the stethoscope immediately over the left ear. After the operation, she was able to retain the horizontal posture. At 4 P. M. of the same day, could hear no murmur myself; the patient says she hears a crackling in her head, and a noise like a bell.

13*th*. Hears no noise in head, even when she listens attentively; nor can any be heard on applying the stethoscope to the temples. *She cannot turn the left eye out as much as before.* 10 P. M. She drew my attention to the fulness of the anterior temporal arteries of the right side.

15*th*. Removed stitches from the wound, which is soundly healed, except where the ligature comes out. She dreamed a good deal last night—horrid dreams. Can now hear carriages in the street distinctly, even when they are far off.

18*th*. Slept well last night; no bad dreams, though she did dream, which she has always been accustomed to do.

19*th*. Dreams of a funny character, instead of frightful.

22*d*. Dreams still more ludicrous in their character.

29*th*. *No improvement in squint.*

30*th*. Does not dream so much.

Jan. 6, 1852. *Left eye seems to be moved more outward.*

13*th*. Ligatures came away in the evening. It will be perceived that the ligature was a long time coming away—thirty-three days. Since Jan. 5, slight traction was used on it by means of an India rubber band. I was indebted for this idea to some remarks made by Mr. Clarke at one of our meetings.

Feb. 2. Continues improving, but complains of indistinctness of vision when using both eyes. Has regained the power of abducting the left eye to nearly its full extent.

16*th*. Indistinctness of vision still remains when using both eyes. *Abduction of left eye nearly perfect.* Patient may be considered well.

Remarks.—This case is, I imagine, unique as regards diagnosis; it is, as far as I can ascertain, the only instance in which aneurism of the internal carotid artery within the cranium has been diagnosed during the life of the patient. In giving the history of the case, I purposely avoided offering any explanation of the symptoms. I will now, therefore, in conclusion, mention the grounds which led me to form my opinion in the first instance; these, taken in connection with the phenomena which ensued after ligature of the left common carotid, will go far to render the correctness of that opinion a matter of certainty.

The suddenness of the accession of the symptoms, coming on as they did under the influence of such exciting causes, together with the character of the bruit, as heard both by the patient and myself, pointed at once and clearly to lesion of a bloodvessel. The absence of the bruit in the heart and great vessels, its being heard at the lower part of the neck, and with gradually increasing intensity towards the head, showed that it originated either in one of the common carotid arteries, or in one of their branches, or else in one or other of the vertebrals. The effect of pressure on the carotids demonstrated that it was the left common carotid or one of its branches that was affected. On carefully tracing the sound, its point of greatest intensity was the petrous portion of the left temporal bone.

In addition to the bruit heard by the patient, you will remember that she also heard, somewhere about the situation of the posterior superior angle of the right parietal bone, a *continuous* murmuring sound, which she compared to low thunder. Now, any sonorous vibrations, produced immediately in contact with the petrous bone, would be conveyed through the walls of the skull—principally by means of the thickened bony ribs, as they may be called, of the cranium, which arise from various parts of the cranial base, and pass up the sides and over the vault of the skull—and would meet at some point at or near the posterior superior angle of the opposite parietal bone; and the vibrations, though intermittent at their origin, would, from the fact of their being conveyed through channels of different length and various conducting power, be no longer heard at the spot mentioned as possessing the same intermittent character as that with which they originated, but would become mingled together, some traversing rapidly, so as to join with the vibrations of the beat before, others slowly, so as to unite with those of the beat after: the interval between the beats would thus be filled up, and the sound heard would necessarily no longer be an intermittent, but a continuous one. The situation of the disease was then not only in the neighbourhood of the petrous bone, but touching it: no tumour could, however, be detected either externally or in either of the nasal, buccal, or pharyngeal cavities. The mischief must, then, be located in the carotid canal of the petrous bone, or immediately in the inner side of it.

The patient had yet one other symptom, but not very easily detected, which came on subsequent to the buzzing in the head, and which, when ascertained and properly appreciated, decided the matter. She had slight, very slight paralysis of the external rectus muscle of the left eye; which muscle is supplied by the sixth cranial nerve, which is devoted solely to it. Now, of all the nerves which go to the muscles of the eyeball, the sixth is the only one that passes through the cavernous sinus, the remainder being lodged in the external wall; and it passes through the sinus in direct contact with the external aspect of the internal carotid artery immediately on its emergence from the carotid canal. A small tumour of the vessel in this situation would account for all the symptoms, not only for those having direct reference to the bruit and strabismus, but also for the inability to lie down; the system being as it were conscious of some imminent danger threatening it, and feeling that it was less likely to suffer injury, the weight of the column of blood being restrained from pressing on the aneurism. (The sitting up may be fairly likened to an ordinary automatic consensual action.) It would also explain in some degree the horrid character of the dreams, which were in all probability produced partly by this constant indefinite sense of danger to which I have alluded, and partly by disturbance of the cerebral circulation.

The double vision, when looking with both eyes, was simply owing to the disturbance of the *usual* axis of vision, produced by the recent and increasing internal strabismus; and the trifling indistinctness of vision was due perhaps to less blood passing through the left ophthalmic artery, thus diminishing the supply to the retina. I am rather inclined to believe that throughout she confounded the effects produced by the continual alteration of the usual axis of vision, first in one direction, then in another, with true indistinctness of vision; though there could not be any doubt but that she saw slightly better with the right than the left eye, and just so much better as a comparatively freer arterial supply would account for.

There could, then, be little hesitation in deciding that the case was one of aneurism, and I had little misgiving but that it was in the situation I have stated I thought it was. But, before operating, I said that I should consider somewhat sudden increase of the paralysis of the external rectus muscle, if followed by its gradual and perfect recovery, as the patient improved and time rolled on, to be perfectly confirmatory of the correctness of my opinion; the view I took being, that the existing slight paralysis of the left external rectus muscle was caused by pressure on the sixth nerve, as it crossed the artery, by a small aneurismal tumour, containing principally fluid blood; but that, when the common carotid should be tied, then a clot would form in the tumour, producing harder and firmer pressure on the nerve, and consequently more marked paralysis of the external muscle; and that, as the clot diminished in size, and became absorbed, the pressure would be taken off the nerve, and it would then resume its functions. The after history of the case, as you have heard by the notes, fully bore out this idea.

In reference to the substitution of a gentle almost continuous murmur immediately after ligaturing the vessel, for the loud whizzing sound previously existing—the substitution being recognized by the patient, and by those present at the operation—it was caused, I presume, by a continuance of the passage of blood, but with diminished force, into the tumour by means of the circle of Willis. At 4 P. M. of the day of the operation, and about five hours after it, this murmur could no longer be heard either by the patient or myself; and was succeeded in its turn by a crackling noise in the vicinity of the ear, audible only to the patient: this quickly ceased.

In addition to the positive evidence afforded by the symptoms in this case, everything that is known of the pathology of the cerebral vessels, in persons of the age of this patient, tends to show the probability of such a lesion occurring under the circumstances in which this woman was placed. I allude to Paget's researches on fatty degeneration of the coats of the cerebral arteries; Virchow's remarks on aneurismal dilatation of the same vessels, caused by paralysis of their muscular coat; to Rokitansky's general investigations on the effects produced by atheromatous deposit on and degeneration of the inner arterial tissues; those effects being either rupture of those tissues and dilatation of the cellular coat, or laceration of all the coats.

Finally, there are records of the discovery, *post-mortem*, of aneurism of the internal carotid artery in the cavernous sinus. Romberg, in his work on *Diseases of the Nervous System*, gives *in extenso* the history of a most horrible case of facial neuralgia of the left side, which was ascertained to depend in great degree on pressure of the Casserian ganglion of the same side by an aneurism of the left carotid artery in the cavernous sinus. In 1836, there was published at Berlin a dissertation by Stumpf, *De Aneurysmatibus Arteriarum Cerebri.* In this he gives two cases of aneurism affecting the internal carotid artery in the cavernous sinus. I have been unable to procure the original dissertation, and only quote from memory a reference made to it."—*Assoc. Med. Journ.*, Nov. 30, 1855.

46. *Aneurismal Varix transformed into a False Consecutive Aneurism, and cured by compression.*—This extremely curious case relates to a patient who applied to Professor Nélaton, under the following circumstances: Three or four months previously he had been bled, and from the operation had resulted a wound of the artery and of the vein, by which an aneurismal varix, perfectly recognizable at the time of his admission into hospital, had been established. On the first view of the case, Professor Nélaton called the attention of his hearers to this patient, hinting at the possibility of a cure by the transformation of the lesion into a false consecutive aneurism, by the following means:—

In a particular point of the aneurismal tumour, a bruit de souffle was heard much more marked than at any other point. If the walls of the vein were strongly compressed with the finger, the characteristic continued bruit de souffle disappeared, and was replaced by the intermittent bruit de souffles pathognomonic of false consecutive aneurism. This circumstance suggested to M. Nélaton the idea that it might perhaps not be very difficult to modify the lesion by means of compression.

He accordingly had a compressor constructed, which, in spite of all the modifications made in it, did not answer the purpose; in this region, we may observe, in passing, compression is extremely difficult. In consequence, it occurred to him to resort to a method which has often succeeded in America—namely, digital compression effected by the fingers of assistants who continually relieve one another. Twelve pupils, volunteers, were enlisted and appointed to keep up the compression for two hours each.

During the first twenty-four hours the compression was borne by the patient without much complaint. During the next twenty-four it was much less tolerable. Finally, at the end of forty-four hours, the patient declared that he could no longer submit to it, so much suffering and inconvenience did it occasion. In addition, the hand was greatly swollen, livid, and rather cold. It was absolutely necessary to discontinue the compression. At the time it was left off, no very remarkable improvement was observed, and yet, from that moment, the state of things completely changed.

Mechanical compression by means of instruments was resumed, and immediately gave a different result from what had formerly ensued. The tumour diminished; the indication was clearly to keep up the pressure, which was done. By degrees its volume became less, and at the end of some weeks only a small, hard, and compact tumour of the size of a large filbert was perceptible in the situation formerly occupied by the aneurismal sac. There was no doubt of the completeness of the cure.

M. Nélaton has not seen this patient again for about a month, but he has not the least doubt as to the cure of the aneurismal tumour, and he has during the last few days called the attention of his pupils, at considerable length, to the possibility of transforming aneurismal varix into false consecutive aneurism, a fact which was not suspected six or seven years ago, and which is nevertheless not very uncommon. In two years Professor Nélaton has met two cases similar to that now described, both of which terminated as favourably.—*Dublin Med. Press*, Jan. 23, 1856, from *Presse Méd. Belge*, Jan. 3, 1856.

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47. *Cases of Entrance of Air into a Vein—Recovery.*—Two cases in which it seems almost certain that air entered a vein during operations, are recorded in a recent number (Feb. 16, 1856) of the *Med. Times and Gaz.* The first case occurred at the London Hospital, under the care of Mr. Ward. The subject of it, Mary Ann Boffee, aged 10, a healthy girl, was admitted under Mr. Ward's care, on account of congenital wry-neck. The face looked towards the left shoulder, and the head was drawn down towards the right; the right sterno-cleido muscle being rigidly contracted. It was determined to divide the tendon of origin of the affected muscle, the deformity being plainly due to its organic shortening. The operation was performed in the usual way, a narrow bladed knife being passed behind the tendon and made to cut its way forward. Both the sternal and the clavicular attachments were divided, and on the section being completed a very profuse gush of venous blood took place. At the same time, a loud hissing or sharply-blowing sound was heard. The patient, who

was in the sitting posture, and not under chloroform, at once fell back insensible, and, with the exception of lividity of the lips, became deadly pale. It was questionable whether or not the pulse could be felt, but if not quite extinguished, it was all but so. The event occurred just as the knife was being withdrawn, and when consequently the wound was held in some degree open. The withdrawal of the knife was at once completed, and the finger placed upon the wound. The child having been laid on her back, artificial respiration was immediately commenced. The state of insensibility did not last more than a minute or two. The pulse in a short time returned, and the respiration began to be performed voluntarily. Within a few minutes the child had quite recovered. No subsequent ill symptoms whatever occurred.

Mr. Ward stated, in respect to this case, that from the peculiarity of the sound produced, and suddenness with which the alarming symptoms followed, he could not feel a doubt as to the nature of the accident. For a short time the child appeared dead, and had not prompt measures for her restoration been taken, it is not improbable that a fatal result would have ensued. The next case to be related, is one in which it was believed that the same accident happened, though the evidence was less positive.

The second case occurred at the Metropolitan Free Hospital, under the care of Mr. Hutchinson. Mary Plainstow, aged 56, a thin, cachectic woman, was admitted on account of a large ulcerated cancer of the right breast. There was also a glandular lump in the axilla, about the size of a walnut. The operation for the removal of both these tumours was conducted under the influence of chloroform. The breast itself was first excised, and, from the large size of the wound necessarily made, some loss of blood was incurred. The gland was found to have more deep adhesions than had been expected. Its removal was effected partly with the finger and partly with the knife, the arm meanwhile being held straight out from the chest. Just as its deep attachments in the apex of the axilla had been divided, a whizzing, bubbling, very peculiar, noise was heard, which suggested to those present the idea of air entering a vein. At the same time there was considerable venous bleeding, but not, as it seemed, from any one vessel in particular. Mr. Childs, who was assisting, instantly placed his finger over the spot whence the sound proceeded, and the arm was lowered to the side, upon which the sound ceased. The patient was at the time lying quite flat on her back, and was so pale from the combined influence of chloroform and loss of blood, that no indications could be obtained from her countenance. The pulse was as feeble as it well could be, but it did not cease; and respiration, although irregular, continued to be performed. After waiting a few minutes, the arm was again lifted from the side, and the finger removed, and again the peculiar whizzing was heard. The finger having been instantly replaced, a further delay took place, but no symptoms supervening, after a short time, all pressure was removed, and ligatures were placed on such vessels as required them. It did not appear that any large vein had been wounded, as there was no material bleeding, except from the small arteries. With the employment of brandy, &c. the woman rallied well after the operation; and excepting that throughout the day she continued to complain of painful shortness of breath, and sense of constriction about the chest, no symptoms which could be referred to the supposed accident developed themselves. She made a good recovery.

Although but little doubt was felt at the time by those present as to the nature of the accident which had occurred, yet it must be admitted that the proof is not conclusive. The circumstance that the patient was in the recumbent posture, and already in a state of insensibility, and almost of collapse, probably prevented the usual train of symptoms from being apparent. The but small loss of blood which occurred is no reason far believing that a vein sufficiently large to have admitted air had not been opened, since, in several of almost instantaneously fatal cases on record, no gush of blood was observed.

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48. *On Congenital Deficiency of the Palate, and the Means to be used for its Relief.*—George Pollock, Esq., read a paper on this subject before the Royal Medical and Chirurgical Society, January 22d, 1856. He stated that his objects

were not so much the relation of a new operation for the closure of the imperfect hard palate (although various novel operative procedures are explained in the course of it), as to draw attention to the fact, that few exceptions exist in which the fissures of the hard palate cannot be effectually and permanently relieved by operation—a fact which, for various reasons cited, appeared to have been much neglected by English surgeons. Mr. Pollock's paper was admirably illustrated by a great many models and drawings of the parts concerned, both previous to operation and during the different stages of the treatment of the cases related. The author divided the different conditions of deformity affecting the hard palate into six groups.

1. The first and most extensive fissure extending through the soft and hard palate—and then dividing in front, passes through the alveolar ridge, making a gap on each side of the incisor teeth.
2. The second extends through the soft and hard palate, and through the alveolar ridge also, by a single gap only, on one side of the incisor teeth. The author had always found congenital fissure of the upper lip associated with fissure, either double or single, of the alveolar ridge; and that when the latter is double, the former was so also.
3. The third passes through the soft and hard palate, and terminates in front immediately behind the alveolar ridge. In this variety, there is often great irregularity of the upper incisors. This group of cases is also accompanied by congenital fissure of the lip.
4. The fourth extends through the soft, and about three-fourths of the hard palate.
5. The fifth extends through the soft palate and the palate bones only.
6. The last exists as an opening in the hard palate, and the soft may be entire.

Upon this classification, Mr. Pollock laid down the principle that the more extensive the deformity, the more extensive the surface of the soft tissues, and the greater, therefore, the facility of bringing the edges of the fissure together, and the greater hope of ultimate success. He gave various admeasurements of the parts, in different degrees of deformity, all tending to prove that the lesser the fissure in the bony palate, the more natural will be the curve of the arch, a condition which is found to add to rather than diminish the difficulties of the operation; for although, in such cases, the soft parts may be readily separated from the bone, yet they will rarely be sufficiently broad or free to meet in the median line without traction, or a resort to some other operative measures; whereas, in the greater degrees of deformity, the sides of the fissure run upwards, in a direction almost perpendicular, and thus afford a larger surface from which to obtain soft parts. Several cases were next related from the author's own practice, and from that of the late Mr. Avery, to whom Mr. Pollock paid a well-merited tribute of respect and regard. In the relation of the cases, and the sequel of the paper, the following points were insisted upon: The line of the first incision of the edges of the cleft ran along the line of union between the mucous membrane of the mouth and that of the nose. It is made with a knife, consisting of a flat piece of steel, bent at a right angle, about a quarter of an inch from the extremity, the cutting edge of which is about an eighth of an inch broad in the centre, and rounded off narrower to each end; a much broader knife, of the same character, is used to detach the soft parts from the bone, an operation requiring great care, to avoid lacerating and bruising them. Knives bent at various angles are required for various parts of the mouth, and one was recommended, the blade of which should be acted on by a screw; they should be strong and firm, and as broad as can conveniently be used. The edges, when detached, should never be brought together by sutures, unless they fall and meet together without traction. The author advocated the introduction of a suture through each of the curtains of the newly detached palate, as preferable to the use of forceps, when manipulating them. The ends of the sutures are brought out of the mouth, and tied in a knot, so that there may be no fear of their being withdrawn, and thus the flaps can be raised or moved about without fear of bruising or lacerating the edges, one of the most frequent causes of failure of union. When the flaps or curtains do not meet of their own weight in the mesial line, a curved knife is introduced through the palate, near the last molar tooth on each side, and pushed upwards and inwards between the bone and soft parts, until its point is seen in the fissure, when the blade is moved slightly backwards and forwards. Lateral incisions may also be required. The author strongly insists on the propriety of not attempting too much at once, and for these reasons: The separation of a large surface greatly interferes with its nutrition; both anterior and posterior palatine arteries would be divided at the same time, and sloughing rendered thereby probable; the length of the operation, and consequent fatigue and pain to the patient. The author prefers to operate upon the hard palate first, because the anterior palatine artery being usually divided in that procedure, the flaps obtain ample nourishment from the posterior palatine vessels; and again, firm union of the new-formed palate is usually followed by a sensible diminution in the breadth of the fissure of the soft palate. Again, it is the more tedious and painful operation of the two. In operating on the soft palate, the author advocates a novel mode of dividing the levator palati muscle. The flap being put on the stretch by the traction of the suture above mentioned, a sharp pointed, double-edged knife is run through the side of the palate, on the inner side of the right hamular process, which can be readily felt through the soft parts. The point being kept in a direction upwards and inwards, is soon seen to have passed through the soft palate, and projecting into the gap of the fissure above the line of the levator. The handle is next raised, and a sweeping cut made along the posterior surface of the soft palate. The knife, being withdrawn, leaves but a small opening in the mucous membrane, and the levator is found to be freely divided. If this proceeding do not sufficiently liberate the curtain, the incision may be carried down to the free margin of the soft palate. Sutures should never exert the slightest traction or pressure. Their removal, of course, will depend on the circumstances of the case; but usually the first may be removed on the third or fourth day. After the operation, fluid or pulpy food should be given liberally; it is very important to insist on this, as the patient will otherwise be deterred by the pain of swallowing. Whiteness and coating of the tongue, after operation, are not to be considered indications for the administration of physic; nor are various conditions of the tongue and fauces previous to operation, and which are due to the absence of the hard palate, to be regarded as indications of defective general health; the latter, however, should always be perfect at the time of operation. The operator upon the hard palate is not to be discouraged by failure in gaining union at first, for parts which were thin and scanty, are often rendered thicker and more vascular by separation from their attachments. When attempts are made to close an aperture in the palate, caused either by malformation or disease, after paring the edges and separating the soft tissues from their attachments, lateral incisions are frequently necessary; and great general support may be given to the sutures used below the wound, by passing a broad suture through the lateral incisions, and thus including both flaps within its embrace. And this is not its only effect; it prevents the healing of the lateral incisions until the opening has had time to unite. Its use is preferable to that of sponge or lint introduced into the wounds. As chloroform is not applicable to these operations, a degree of self-command and endurance is required, which cannot be expected in an individual under the age of seventeen or eighteen, at which period also the development of the parts affected may be presumed to be nearly completed. Mr. Pollock suggests, in conclusion, that although in all cases in which operative procedure has been attended with success a great improvement has invariably been noticed in the speech and articulation, yet much remains to be done by education. Efforts must be made to change the acquired habit of pronunciation for a new method of articulation, which may be best and easiest effected by the patient repeating words after a teacher, or reading aloud, subject to correction. Difficulties in this respect will, however, often be found to depend upon the fissure in the alveolar ridge, or irregularities of the teeth.—*Med. Times and Gaz.*, Feb. 2, 1856.

49. *Congenital Fistula of the Neck.*—Dr. J. M. **Duncan** records (*Edinburgh Med. Journ.*, Nov. 1855) the following example of this rare condition, to which attention has been latterly drawn by Dzoni, Ascherson, and Rathke. E. A., a boy, æt. 16, of a delicate constitution, has, about a line and a half above the insertion of the sternal tendon of the right sterno-mastoideus muscle, a reddish spot, scarcely so large as an ordinary pin-head, having in its centre an opening, almost imperceptible to the naked eye. Every day, as far back as he can remember, a little whitish viscid fluid has come away from this spot. The ordinary condition of the spot is to be covered with a small scale of the dried secretion. About a drop of this secretion occasionally issues spontaneously in the course of the day. This, when dried on the shirt, has the appearance of a yellowish spot of dried albumen. Most of the fluid is brought away at night, and, occasionally, also in the morning, at which time he is wont to empty the fistula by pressing his finger along the neck, from above downwards, between the sterno-mastoid and trachea, with a milking-like motion. At such times, the quantity discharged is equal to many drops. On examination, this secretion is found to consist of a viscid fluid, containing numerous large mucous globules. He has never observed anything but this fluid come from the aperture, nor can he, by closing the mouth and nostrils, and making a violent expiratory effort, force any air from the mouth through the fistula.

His mother states that the little orifice attracted her attention almost immediately after his birth, in consequence of stringy mucus being found adhering to the spot. Whenever he sucked, the pure milk flowed drop by drop from the orifice.

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50. *Use of Potassa Fusa in the Local Treatment of Boils and Carbuncles.*—Mr. **Benjamin Travers**, in an interesting paper (*Med. Times and Gaz.*, Jan. 12, 1856) on this subject, does but justice to our eminent countryman, the late Prof. Physick, of Philadelphia, for introducing into practice the use of potassa fusa in the treatment of carbuncle.

Mr. T. has been induced to make these remarks in consequence of having seen "a succession of well marked instances of the great advantage to be obtained by the use of a powerful caustic like the 'kali purum,' in securing the safe and far more speedy convalescence of those who are suffering under the above disorders, at any period of life:" he says, "it is only of late, and, indeed, even now but to a very limited extent, that the surgeons of this country have begun to appreciate the great superiority of this method. This is not surprising when we see to what an extent the idea has been discouraged by writers even of our own day. Their objections, however, are unreasonable and unscientific, and they have been advanced by those who knew nothing whatever of the effects of this practice in an experimental point of view, or as a matter of personal experience. In what has been termed the second stage of these collections, provision must be made by means of an artificial opening for the escape of the dead matters beneath the strained and spoiled integument, which in its turn must surely die, albeit more slowly, and to a more limited extent. It should be borne in mind that we are not here dealing with a texture which has undergone the attenuation consequent upon an interstitial removal, but that the parts are already condemned, and will infallibly die to a limited extent, since they are the seat of a mode of inflammation having a very different event from that which determines the progress of a common acute abscess. Such a collection, when ripe, we prick or cut, in strict submission to and observance of a natural law. For an equally good reason we ought not to cut boils and carbuncles. For the present I must not enlarge on this head, but content myself with observing that besides the anomaly implied in cutting and wounding a mass of inflamed tissue already disposed to die from excessive irritation, the risk of a fatal hemorrhage so incurred is by no means an imaginary accident. The subsequent low rate of healing after the use of the knife constitutes another most grave objection to its employment. Dr. Physick, of Philadelphia, has, in my opinion, established an undivided claim to the merit of having first used the caustic potash, with a scientific view, in the treatment of carbuncle. (Vide *Philadelphia Journal of*

Medical and Physical Science, vol. ii.) He was the friend and pupil of John Hunter, and certainly the most distinguished man of his time in America. He died so lately as the year 1837, and has been called the Father of American Surgery. (*Vide* 'A Memoir,' etc., by J. Randolph, M. D., Philadelphia, 1839.) Dr. Physick says, 'that the suffering ceases as soon as the pain of the caustic has subsided.' I cannot do justice to the importance of this observation in a communication like the present, but I possess, and, indeed, am constantly accumulating fresh evidence of its truth, both as regards boil and carbuncle. M. Maunior, of Geneva, the celebrated ophthalmic surgeon, strongly advocated this practice. Indeed it needs but a patient trial to convince the least credulous of its extraordinary efficacy."

Mr. Travers relates four cases demonstrative of the superiority of caustic to the knife.

51. *Treatment of Hospital Gangrene, and of Wounds in General, with Glycerine.* By M. Demarquay.—Last year, M. Cap published two memoirs on glycerine, in which, after having described its physical and chemical properties, he endeavoured to show what useful applications might be made of it in medicine and pharmacy. Many distinguished practitioners in England and France have employed it in the treatment of several medical affections; but it has hitherto been neglected by the surgeon. However, reflecting on the physical and chemical properties possessed by this substance, it appeared to me that it might be of some use in dressing wounds. Accordingly, I lost no time in turning my sojourn at the Hôpital Saint-Louis to account by making some trials with it under Professor Denonviliers. Some of the patients whom I had to treat having been attacked with that severe complication of wounds, hospital gangrene, I first made use of the active measures with which this affection is usually combated, namely, citric acid, nitric acid, and the actual cautery, but in vain. I then had recourse to glycerine, and in twenty-four hours the wounds of the sufferers had changed their appearance, the fever gave way, and a cure was speedily accomplished.

Struck with these facts, as were all those connected with the hospital, I resolved to continue my researches, and to apply glycerine to the treatment of ordinary wounds. Consequently, all the wounded in the hospital were dressed with glycerine, and the following are the results we obtained:—

Wounds submitted to this mode of dressing have a florid colour, and continue so clean that washing and the recourse to the spatula to remove the cake of cerate and pus, which renders the present mode of dressing wounds so tedious and painful, can be dispensed with. Folds of linen smeared with glycerine are removed with the greatest facility; and, besides, this substance moderates the suppuration, as I have ascertained in the cases of a number of patients, who, before the employment of the new dressing, had been using the cerate. The granulations, too, are not redundant, and consequently do not require to be kept down by the application of caustic.

To these advantages, we may add that the dressings are rendered soft and agreeable to the patients, while the cicatrization of the wounds is remarkably promoted. All these circumstances have been verified by Professor Denonvilliers, and it is with the support of his name that I have the honour to bring forward the results of my researches.

The manner of applying glycerine in dressing wounds is extremely simple. A fold of perforated linen, dipped in the fluid, is placed over the wound so as fully to cover it; a little lint is applied over the linen, and the entire is covered with a compress and bandage. The next day the linen can be removed without pain, and the wound appears florid, clean, and scarcely covered with pus.—*Dublin Med. Press*, Dec. 5, 1855, from *Presse Méd. Belge*, Nov. 25, 1855.

52. *Treatment of Salivary Fistula.*—The plan which is here described is recommended by its simplicity as well as by the success which attended its employment. It ought, at least, to have a fair trial before having recourse to severer measures.

Case.—A man æt. 28, strong and healthy, was operated upon, in July, 1853, for a cyst in the course of the duct of Steno. Three days afterwards, saliva was found to escape from the wound.

First of all, careful pressure was made with small pledgets of lint. The result of this treatment was, that a painful and red swelling formed in the neighbourhood of the parotid gland. Attempts were then made to close the wound with a silver needle and a twisted suture; but this plan did not answer, and after four days the saliva escaped freely from the punctures made by the needles. After this a steel contrivance was used, which kept the edges of the wound in contact throughout their whole extent, but this the patient could not bear.

M. Rudolfi next bethought himself of collodion. He carefully dried the edges of the fistula, and applied two drops of the solution, which presently dried up, and left the part covered with an artificial cuticle. The day following, he thickened this pellicle by dropping more collodion upon it, and so on the next day and the day following; and the end was, that in eight days the patient was perfectly well, the fistula having been closed from the time of the first application of the collodion.—*Ranking's Abstract*, vol. xxi., from *Gaz. Med. de Paris*, Dec. 16, 1854, and *Gaz. Med. Ital.*, 1854.

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53. *Case in which a Cedar Pencil was lodged in the Cavity of the Abdomen for Eight Months.*—This case was communicated to the Royal Medical and Chirurgical Society by Prof. Erichsen. In September, 1854, the patient, a young woman aged 28, being suddenly surprised while in the act of endeavouring to pass a pencil for the relief of some difficulty in micturition, allowed it to slip out of her hand. On sitting down shortly afterwards, she was seized with acute stabbing pains in the lower part of her abdomen, and although careful search was made by a medical man soon after the accident, no trace of it could be discovered. Frequent attacks of peritonitis followed the accident; and when she was seen by Mr. Erichsen, in May last, she was much emaciated and debilitated from that cause, as well as the constant severe pain in the abdomen, attended with vomiting and retching, which she suffered. There were no symptoms referable to the bladder, nor any pain in defecation; blood was occasionally passed per anum, but was attributed to piles, from which she had previously suffered. Upon examination, the point of the pencil was felt distinctly projecting just beneath the integument of the abdominal wall on the right side, about midway between the umbilicus and Poupart's ligament; it was movable, could be pushed backwards, but returned to its original position when pressure was removed. The finger passed into the vagina or rectum detected the pencil, through the walls of those organs, lying across the body in a direction from before backwards, the blunt end of it being lodged in the hollow of the sacrum; it was beyond reach of the finger, but pressure upon that part of it through the rectum caused the point to become more distinct in the abdominal wall in front. Under these circumstances, an incision was made by Mr. Erichsen through the anterior abdominal wall, until the leaden point of the pencil was discovered forced through the fascia transversalis, the pencil being at the same time caused to project upwards and forwards by an assistant pressing deeply in the rectum. The wound being slightly enlarged, the pencil was extracted; it was five inches and a half long, and the point was still perfect; it had separated into its two halves. It was marked by three broad bands, indicating that it had passed through two coils of intestine; but no flatus or feces, however, followed its extraction. Severe peritonitis followed, and the patient died on the fourth day after the operation. *Post-mortem* examination proved that the pencil had been forced through the upper and posterior vaginal cul-de-sac, close by the side of the uterus, and then through two coils of the ilium, a mass of which, about the size of the fist, was found glued together by old and recent lymph, lying about midway between the umbilicus and pubes, to the right of the mesial line.—*Med. Times and Gazette*, Dec. 22, 1855.

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54. *Rupture of the Spleen from External Violence, followed by Pleuro-pneumonia and Death.* By Dr. Duffin.—Thomas Powell, æt. 21, a soldier of the 57th

regiment, was admitted into hospital on the 8th of September. The day of the final attack upon the Redan, he was in the trenches, and was hit on the left side by a piece of shell. I saw him at the time, and ordered him to be taken to our field-hospital in camp. He walked the whole of the way; when on his arrival he was further examined by Dr. Macandrew, the surgeon of the regiment. At the time he was suffering from severe pain in the left side, which was augmented by pressure over a circumscribed space, corresponding to a point a little external to the cartilage of the ninth rib, and not more than three inches in circumference: anxiety of countenance and accelerated pulse, but no abrasion on the surface—no fractured rib—no swelling or discoloration of the part. He was treated for the symptoms, and discharged two days after, viz: on the 10th, at his own request, and to all appearance quite well. He returned to his duty, which he performed as usual, until the 12th, when he was readmitted under my care, labouring under the following symptoms: General increased heat of the surface of the body; pain, of a violent character, in the small space already referred to, with very intense heat; hard and quick pulse; tongue covered with a whitish fur. The stethoscope revealed a slight crepitus at the base of the left lung; rather difficult breathing; and very deep inspiration, evidently causing pain: the epigastric region was distended, and the whole abdomen tympanitic. Percussion gave a clear and normal sound over both lungs.

Treatment.—He was bled from the arm till syncope was produced; subsequently twenty leeches were applied to the painful part; calomel, antimony, and squills were given; salivation was produced rapidly, and the action of the mercury kept up until the 25th. This was the chief treatment. He died on the evening of the 26th, in an agonizing state. For several days he seemed to be improving, and could talk with ease and freedom from pain; but on the 20th the crepitus in the left side, at first very indistinct, became quite audible, and extended over the greater part of the same side, even over the pericardium. Pressure at no time gave pain, except in the one small spot.

Post-mortem Examination.—The pleuræ of the left side were throughout their whole extent highly vascular, particularly the costal, and in lower part of the side numerous small specks of lymph were plainly visible to the eye; there was no decided thickening, except at those points. The pleuræ were united by a few soft shreds of lymph: a small patch of the base of the left lung was congested; in other respects both lungs were healthy, though much contracted in size. The pleura costalis and pulmonalis of the right side were united by numerous bands of recently effused lymph, yet no other trace of inflammation was present. The cellular tissue of the anterior mediastinum was congested; the pericardium contained a large quantity of serum, but in it there was no vascularity; the small capillary vessels, on the surface of the heart, were plainly seen, and presented a beautiful network appearance. The peritoneum throughout its entire extent was of an almost perfectly black appearance, as well that of the parietes as of the intestines; the omentum was, likewise, black, but in no other respect did the peritoneum differ from its healthy character. It was still glistening, tense, and elastic. The stomach and intestines were greatly distended with gas. The spleen was of about three times its ordinary size, ruptured to the extent of two inches in its long axis, and to a considerable depth in its anterior and external aspect; its substance was infiltrated with congealed and black blood; the vessels entering and leaving were uninjured. There was no fractured rib, no laceration of the parietal peritoneum. The liver was healthy, nothing abnormal apparent about it.—*Dublin Hospital Gazette*, Nov. 1, 1855.

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55. *Mode of Testing the Translucency of Hydrocele.*—Dr. W. Frazer directs attention (*Dublin Hospital Gazette*, Nov. 1, 1855) to what he believes to be one of the best methods of employing the valuable test of translucency in hydrocele, a test which is practically so important as a differential diagnostic in discriminating between mere serous effusions in the cavity of the tunica vaginalis and various affections of the testicle, or scrotal hernias. Of course, every one is aware that the test is not free from objection; thus, it is almost or entirely

useless in those instances in which the effused fluid is of very dark colour, or is mixed with blood, &c., and also whenever the tissues of the tunica vaginalis are of unusual thickness, or are the seat of cartilaginous or osseous deposit, or when they are coated internally by the products of previous inflammatory action. Independent of these exceptional cases, there are a number to be met with in practice, in which the test is of value.

As ordinarily employed, by placing a candle at one side of the tumour, and excluding the passage of the light laterally by means of the hand, it is, at best, a clumsy proceeding, and liable to errors. I have found the stethoscope much more useful, as a means of excluding the diffused light, and by applying the eye to its expanded bell-shaped portion—the ear-piece being firmly placed upon the scrotum, held in a tense condition—we can even map out the state of the parts with tolerable accuracy, if the contained fluid be of ordinary character, and detect the position of the testicle by the opacity it produces, especially when it occupies any unusual locality, as the front or sides of the scrotum, or is adherent from inflammation after previous tappings. We can employ either a lighted candle or bright sunlight, as our best means of obtaining the requisite illumination; but even in diffused daylight I have succeeded very well in the manner I mention.

OPHTHALMOLOGY.

56. *Black Cataract.*—M. Haynes Walton communicated to the Royal Medical and Chirurgical Society (Nov. 27, 1855), the following curious case: A man, aged 75 years, had lost the sight of both eyes for several years, and whose symptoms, objective and subjective, were: The cornea and sclerotica were healthy; the irides bright and in their natural planes. The pupils were of ordinary size, and acted but slightly, even when submitted to a bright light. The anterior chambers were large. In the left eye there was the ordinary coloured cataract of advanced life, not, however, very opaque. With this eye he could see the outline of his hand or any large body. The first symptoms developed themselves in 1849, when the late Mr. Dalrymple was consulted, and gave it as his opinion that incipient cataract existed. In October last, Mr. Walton was consulted, when the remarkable blackness of the right pupil attracted his attention. By the aid of a strong solution of atropine to both eyes, and the use of the ophthalmoscope, he saw in the right eye a cataract of a very deep-brown colour, uniform over its entire surface, being without striæ or markings of any kind. By the aid of the sun's rays, concentrated by a powerful lens, it was more discernible. Mr. Walton considers this mode of examination superior to the ophthalmoscope. The opinions of Mr. Lawrence, Dr. Mackenzie and Mr. Tyrrell were quoted by the author in support of the rarity of this peculiar form of cataract.

Mr. Taylor, having had an opportunity afforded him of examining the case, confirmed the accuracy of Mr. Walton's description. When undilated, the pupil was of an intense black, like that of a child; not even when fully dilated was there an opacity visible, until a strong light was thrown on it by means of a lens. Then there was no difficulty in seeing the opacity, which was of a very dark-brown colour, and to him (Mr. Taylor) appeared to be situated in the nucleus of the lens, the superficial layers being little if at all affected.

Mr. Dixon had seen one case, and only one, of absolutely black cataract. Some years ago, he put on record that black cataract never existed, and soon after, as if to spite him, one of his colleagues extracted one. Several cases had been recorded, all presenting similar appearances. He might refer to those found by Stallwerg, and taken from the dead subject, in which multitudes of black granules were found interspersed between the fibres of the lens and in the substance of the fibres. Another, as examined and exhibited before the Societé Biologié, in Paris, by Blot, had the same characters as those before referred to. The case of his colleague was diagnosed as hard cataract, with white striæ in the circumference. The patient did well, and the sight is good.

Mr. POLLOCK mentioned a case, confirmatory of what had been already said. It was in an old general officer, and had been seen by him and by the late Mr. Dalrymple; but the ophthalmoscope was not then known, nor the use of a strong light, but all the symptoms of cataract were present. The patient could see better in the dark than in a bright light. The case was one that did not admit of operation by extraction, attacks of chorea being frequent; but depression was performed, and he got good vision. Mr. Dalrymple said it was the only case of black cataract he had ever seen.

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57. *Myopia.*—Dr. ROBERT HAMILTON reports (*Edinburgh Med. Journ.*, Nov. 1855) the following curious case, which, as he observes, differing in one respect from ordinary instances of near-sightedness, may be classed with propriety under that head, in the present state of our knowledge:—

Mr. J. R., 30 years of age, a schoolmaster by profession, has experienced much inconvenience, during the last three years, from a defect of vision, particularly in his left eye, which did not exist previously. While teaching geography, with the aid of a large and distinctly-marked school-map suspended in front of the children, he can see nothing clearly; but the most gentle pressure upward, with his finger on the lower lid, enables him to distinguish every place in the most satisfactory manner. He cannot read small print readily at a greater distance from his eye than eight inches; but by gently pressing the lower lid in the way already described, he can do the same at the distance of two feet. Upon careful examination of the eye, no want of symmetry in the cornea, or any other abnormal appearance, can be discovered. A strong conviction that some peculiarity of form existed had hitherto prevented him from trying the simple remedy of a concave lens; so that he had persevered, month after month, with the irksome expedient already mentioned. His satisfaction may be imagined, on finding that a pair of concave spectacles completely met his case.

The relief afforded to the myopia by gentle pressure on the globe is a suggestive fact, when viewed in connection with those cases of strabismus in which a marked improvement of vision takes place *immediately* after the muscle is divided.

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58. *Amaurosis.*—Dr. HAMILTON records (*Edinburgh Med. Journ.*, Nov. 1855) the two following very singular cases of this disease:—

J. S., 29 years of age, an intelligent, steady young man, of regular habits, by trade a tinsmith, gives this history of his case. In the year 1843, after more than ordinary fatigue, he became conscious of a dimness of sight in the right eye. This gradually increased until he could see with it only a very little towards the outer side, and at last nothing remained but a bare perception of light. In July, 1850, the blind eye was affected with a severe and obstinate attack of rheumatic ophthalmia, and since that date it has caused him no trouble, but all vision is completely gone. At present, its condition is as follows: The cornea and sclerotica have a healthy appearance, and the consistence of the globe is natural. The iris retains its lustre; but the pupil is irregular, and adheres all round to the capsule of the lens, which is white, and perfectly opaque. There is some undue action of the external rectus muscle; but were it not for the total insensibility of the eye to light, the formation of an artificial pupil might be almost deemed practicable.

It is with the left eye, however, that we are chiefly interested at present. The history is briefly this:—

In the month of June, 1853, more than three years after the right eye had passed into its present condition, he awoke one morning so nearly blind that he could just distinguish light from darkness. No improvement took place for months, and then only partially during a few weeks, after which the returning light suddenly disappeared, to use his own expression, "in a shower of black flakes." Vision soon began again to return, and, betwixt February and May, 1854, was as perfect as ever, and he resumed his ordinary occupations. While walking in one of the streets of Dundee, in conversation with his medical attendant, darkness suddenly supervened, in the same manner as formerly, unaccompanied by uneasiness in the head, or any other symptom of bodily ailment. In the following August, his sight began to return; and betwixt that date and May, 1855, when he applied at the Eye Infirmary, the same alternation of blindness and restored vision had taken place four or five times. On this occasion, May 14, his sight was nearly at its worst, having suddenly departed, five days before, in the usual way, without any conceivable cause or accompanying symptom. The eye presented all the characters of health, unless, perhaps, the pupil was slightly larger than usual; but the latter contracted and expanded readily under various degrees of light, and the iris had all the brilliancy of perfect freedom from disease. The cornea was transparent, and the sclerotic devoid of vascularity. No appearance could be detected within the eye to throw any suspicion on the retina, choroid, or hyaloid membrane, and the globe maintained its normal consistence.

Although there were no very clear indications for treatment, a single grain of blue pill was prescribed night and morning.

On the 20th of August, he could read with perfect facility, and at any reasonable distance, the smallest print on our patient's card, and this improvement continued on the 10th of September. Next day, he came back as blind as ever—a sudden accession of darkness having occurred in the evening, as he sat by the fire. Up to the present time (October 9), little improvement has taken place. He mentions that, when lying on his back, there is a sensation as if some dark matter gathered on the surface, while, in the erect posture, it seems to become, as it were, stirred up, more generally diffused, and less dense, so that he can see the outlines of familiar objects indistinctly, as if he were looking through a hedge.

It may be expected that the ophthalmoscope would throw some light on the pathology of this and analogous cases. It was had recourse to; but, possibly from want of expertness in using it, we failed to obtain any information. When a double convex lens does not, as in this case, reveal any abnormal appearance behind the pupil, we doubt much if supposed revelations of the ophthalmoscope are worthy of confidence, not to mention the manifest danger, as acknowledged by Mr. Dickson and others, of concentrating luminous rays upon inflamed or congested textures.

We would suggest that the cause of amaurosis in the foregoing case is external to the eye itself, and probably, in some portion of the nervous or cerebral substance, associated with vision.

The following case is not without interest, in connection with these remarks:—

A lady, 42 years of age, while stooping to adjust the hearth-rug, perceived a sudden shower of sparks before her left eye, and immediately lost all power of vision, except a mere perception of light towards the outer side. This continued for more than twelve years, until one morning, on awakening out of sleep, she was agreeably surprised to find her sight restored. She had experienced a curious sensation, the evening before, in the back part of her head; but when the writer of this called after breakfast, she was sitting up in bed reading a newspaper with facility. Shortly afterwards, her stomach became irritable, she had bilious retching, lost all appetite for food, and died exhausted within a month from the time of regaining her vision. No *post-mortem* examination took place.

MIDWIFERY.

59. *Placenta Prævia.*—Dr. Radford records (*Assoc. Med. Journ.*, February 2 and 16, 1856) the following interesting cases of placenta prævia:—

Case I.—On June 24th, 1820, I was requested by Mr. Dick to visit a woman who resided in Greengate, Salford, who was reported to be flooding; she was in labour of her third child, and had a profuse discharge of blood. I found she had previously flooded twice, at intervals of about three weeks; but each of these attacks was comparatively trifling. There was no obvious cause for them; and on the patient being put to bed, the discharge soon began to diminish, and required no further measures besides rest in the recumbent position.

The present flow had abated when I arrived; but it was, and had been, increased on the accession of pain. On making an examination, I found the os uteri dilated to about the size of a crown-piece; it was soft and dilatable; a small portion of the placenta with the membranes was felt tightened during the pain, but hanging loosely over the os when it (the pain) subsided. The head of the child was easily touched, as the uterus acted briskly and effectively; and as the discharge of blood was now comparatively trifling, it was thought prudent not to interfere, but to leave the case to nature. In the course of two hours, the membrane ruptured; the head descended into the pelvis, pressing the separated portion of the placenta aside as it progressed, and very soon the child was born alive. The uterus contracted well; there was only an ordinary discharge; in about half an hour afterwards, the placenta was expelled. No further hemorrhage happened. The bandage placed on before delivery was now tightened. She recovered without the slightest interruption. Those portions of the placenta which had been separated previous to labour, were readily distinguished from that (the last) which caused the flooding at this time, being more consolidated and of a different colour.

Case II.—Mrs. Buckley (on 24th March, 1821) desired me to visit a hospital patient, residing in Hanover Street, who was said to be in labour and flooding. When I arrived, I found the discharge, which at first was great, considerably abated. This was her fifth pregnancy. She had felt pains four hours, which had now become severe; during each pain, the flow of blood had been slightly increased from the commencement of the labour, but was trifling in amount until the time when I was sent for. Her pulse was, however, unaffected, and her countenance natural. The os uterri was dilated to the size of a half-crown, and felt thin and soft; through it, I found an edge of the placenta, which organ adhered to the right latero-posterior part of the cervix uteri: the distended membranes were readily perceived during the pain, and the head of the child was felt on its remission.

I remained with the patient some time, during which the pains increased in intensity and effect; the discharge of blood gradually ceased. I now left her in the charge of the midwife, with an express order to send for me again if the bleeding recurred. I heard nothing until the following day, when she called, and stated the membranes ruptured in about two hours after I left; the child was borne alive; the placenta was naturally expelled; there was no further loss than what usually takes place. The woman recovered well.

Case III.—On February 21st, 1822, I was requested by Mrs. Bradley to visit a hospital patient residing in Cumberland Street, who was reported to be flooding. She had now arrived at the eighth month of her second pregnancy, and had been quite well up to this period. She began to flood without any known cause. Mrs. Bradley had put her to bed, and placed a bandage round her, and used cold applications. The flow of blood was said to have been profuse, but it had considerably lessened when I saw her. I examined her, and found the os uteri closed, and therefore I could not ascertain whether the placenta was situated near it or not, although I suspected it was, from feeling the cervical walls fuller and thicker than they ordinarily are at this period of pregnancy; and also, as no external cause had occurred to account for the accident.

When I left the patient, I desired Mrs. Bradley to send again for me if there was a return of the hemorrhage. I, however, heard nothing more of the case until a month had elapsed, when I was called to her to extract the placenta, which I found slightly adherent. Her labour, up to this point, had been natural and easy. The placenta was readily detached and removed, and there was no flooding. I carefully examined this organ, and readily distinguished that portion, which had been separated and caused the accident, from the rest of it; its structure had become firmly condensed, and less vascular.

Case IV.—In June, 1830, I was requested to visit a lady, pregnant for the third time. My opinion was sought, because in her two former labours the children were born dead. She was now nearly seven months advanced; her health was good; and she said she felt the child very lively. In a fortnight after this interview I was sent for, as she was flooding. I found her on the bed, and looking pale; her pulse was rather quick and feeble. I was told she had lost a large quantity of blood. Although the bleeding was now comparatively trifling, yet it continued. She had no pain; and having placed my hand on the abdomen, I felt the uterus flaccid; I found the os uteri closed, and the cervix uneffaced. A bandage was placed round the body, and pinned tightly over the uterus. Cold water with vinegar was externally applied, and the apartment kept cool. An unstimulating diet was ordered, and quietude, in the recumbent position, strictly enjoined. Nothing further was required, as the hemorrhage gradually ceased, and did not return. She progressively improved after this accident, and she continued to feel the child to be vigourously alive. Arrived at the eighth month, it was, for a few days, felt less sensibly, and then altogether ceased to move. At this time, the breast lessened in size, and became more flaccid. About a week before the expiration of the ninth month labour came on. When I visited her, the pains, now brisk and frequent, had existed for two hours. I found the os uteri considerably dilated, soft, and yielding. The membranous bag, with a portion of the placenta, was felt; but there was not the slightest discharge of blood. The os uteri continued rapidly to dilate; the membranes ruptured; and the separated (now loose) flap of the placenta was pushed aside, and passed by the descending head. The pains being very strong and forcing, the child (dead) was soon expelled. There was not the slightest hemorrhage. The placenta was soon extruded, which, on examination, was found had lost its usual fresh vascular character; the portion which had been separated at nearly the seventh month, and then caused the flooding, was readily fixed upon.

Case V.—The following case recently occurred to my respected friend and colleague, Mr. Skinner, who has kindly permitted me to cite it:—

On October 28th, 1855, 5 o'clock P. M., I was called by one of the midwives to attend Ann Malon, aged 23 years, who had been attacked, while in bed this morning, with hemorrhage. She is nearly at her full time, and states this is her third pregnancy, and the two previous labours were perfectly natural, and she recovered from both without a single unfavourable occurrence. Both of the children are now living.

At about the seventh month of this (the present) pregnancy, she had some slight hemorrhage while engaged in some domestic occupation; but there was nothing in the nature of this which she could assign as a cause of the flooding, which was unaccompanied by pain. At this time, she was ordered a mixture with sulphuric acid diluted, and opium, which speedily checked the dribbling discharge, which had continued. She felt the movements of the child soon afterwards. She has been free from the discharge up to my visit. On now making an examination, I found one or two small coagula of blood in the vagina; the os uteri dilated to about the size of a shilling, and I thought I detected the placenta presenting on the left latero-posterior part of this part of the uterus. She had then no pain, and, since the morning, no return of bleeding. Her pulse was tolerably good. Plumb. acet.; tinct. opii; rest; cold applications to the vulva, and the room to be kept cool.

Monday, October 29. She has had no return of hemorrhage; has no pain. She slept part of the night, and has taken some gruel at intervals. On an examination, I found the os uteri in the same condition as before reported. She was this evening carefully and safely conveyed (in the horizontal position) on slings to the (St. Mary's) hospital. Ordered to take an opiate draught.

30*th.* No return of hemorrhage; she has had a comfortable night. She has no pain; she takes nourishment. Her pulse is good. Dr. Radford examined her with the stethoscope; he heard the fœtal cardiac sounds; the placental souflet most distinct over the left lateral portion of the cervix uteri.

November 1, 2 *o'clock P. M.* Labour suddenly commenced. The membranes ruptured, and a full-grown living fœtus was expelled by two or three strong pains. Mr. Runcorn (our resident apothecary) was summoned up stairs. There was not the slightest flow of blood, although Mr. Runcorn had to introduce his hand to detach the remaining large portion of placenta, which was rather firmly adherent. There was only the ordinary lochial discharge. She rapidly recovered, and was discharged cured on November 10th.

Remarks.—These cases are, in my opinion, sufficient in number to prove the fallacy of the dogmatic rule, which inculcates that active operative interference is necessary in all in which the placenta is implanted on the lower (cervical or oral) portion of the uterus.

These labours were, in the main, natural, and required only the same management as is adopted in such cases. It is true, there was an unavoidable contingent—the anormal position of the placenta; but, fortunately, the perils which frequently happen in placenta prævia, and not only threaten the woman's safety, but sometimes destroy her, were here naturally averted.

In all these cases (and in others of similar kind which have come within my observation), the mothers survived, and all the children but one were born alive; the death of this one was not traceable to any incident which happened before or during the labour, but was to be attributed to some constitutional cause which had previously destroyed the lives of two children. Examples like these are important to warn against rashness, but ought not to lead carelessly to overlook the possibility of dangers supervening, even in cases which at first promise a propitious termination. On the contrary, we should ever be watchful, and endeavour to make them lessons to teach us to adopt, artificially in other cases, the same plan which nature has wisely pointed out in these. They afford us ample evidence that several conditional circumstances must exist, in order that a safe termination of labour, without artificial aid, may take place in cases of placenta prævia. A limited portion of the placenta must only be connected with the dilating portion of the uterus, whilst the great bulk of it (the placenta) must be placed beyond the sphere of those actions which prepare for the egress of the child. The edge of the placenta, which is usually fixed to the os uteri in such cases as the above, is usually comparatively thin, and contains fewer and lesser sized vessels than those which belong to the central portions of this organ. The degree of separation of the edges of the placenta in the above cases was small, so that the natural anti-hemorrhagic powers were equal to suppress the bleeding. The death of the child in Case IV. doubtless contributed to prevent a repetition of the flooding.

(For a more full exposition of my opinions on the subject, *vide* remarks "On the Suppression of Uterine Hemorrhage without Artificial Assistance."—*Lancet*, vol. i., 1847, p. 296.)

The soft dilatable state of the os, and the energetic action of the body and fundus uteri, which recurred in these cases, most certainly contributed, in some measure, to a happy issue.

Case VI.—June 22, 1825, at the request of Mrs. Capper, I visited a hospital patient residing at Knott Mill. She was in her ninth month, and was flooding excessively when I saw her. She was faint; her countenance was very pallid; and her pulse feeble and fluttering. During the previous six weeks she had two attacks, for which there was no obvious cause; but the hemorrhage was comparatively slight at each of these times. The os uteri was closed and rigid, so that I could not positively ascertain whether the placenta was fixed over it; but I suspected it was. She had no pain. A bandage was now placed round the body, extending well down over the hips, and after placing a firm and large sized compress over the uterus, it was very tightly pinned, and in a way to press this organ downwards into the pelvic cavity, and thereby prevent the risk of distension from internal bleeding. I now effectually plugged the vagina with sponge. Through the centre of the first portion of this substance I passed a piece of tape twice, the ends being long enough to hang out externally for the purpose of rendering its withdrawal easy; it (the sponge) was placed against the os uteri; other sponges were successively passed, until the vagina was completely filled. A napkin, narrowly folded, was now placed over the os externum, which was kept in position by a handkerchief brought between the thighs and tightly pinned before and behind to the circular or abdominal bandage. A draught, with one drachm of tincture of opium, was given; cool air admitted; some brandy and water was administered; and suitable support at proper intervals taken. Great attention was paid to ascertain whether there was any external discharge, but there was not the slightest appearance; and there was ample proof, from the patient's improvement, that there was no internal hemorrhage. After remaining some time, I left her.

In the evening, I found her better; no discharge of blood; had some sleep; she had not passed urine. The catheter introduced, a quantity of water was drawn away. One drachm of tincture of opium was ordered.

The next morning she was very much improved; had slept well; she expressed herself as comfortable in every respect, except from the inconvenience of the plug. I now removed the sponges, and along with the last piece some small coagula passed, but there was not the slightest appearance of fresh blood. She continued to go on favourably. At the end of a fortnight, her labour came on, and terminated without any further hemorrhage. The child was born alive.

Remarks.—The above case forcibly proves the value of the plug in arresting large discharges of blood. The portion of placenta which was separated, was of considerable size, so that when the membranes ruptured, it fell sideways, and thereby allowed the head of the child to pass, without leading to any further separation. Its organization was uninjured, or, most likely, the child would not have survived after such profuse discharge. I have minutely detailed the mode I adopted in plugging the vagina, as I feel convinced this valuable means has fallen into disrepute with some practitioners, entirely from its ineffectual application under their management.

Case VII.—April 4, 1826, I visited a lady residing in Strangeways, who was said to be in great danger from flooding. I found she was at the seventh month of her fourth pregnancy, and that a sudden discharge of blood took place whilst she was engaged in a sedentary occupation. She had fainted before my arrival, and still felt very faint; her countenance was pallid; and her lips rather blanched.

On making an examination, I ascertained, though with some difficulty, from the high position of the os uteri, that it was rigid and undilated. Although I had suspicion, yet I could not feel, that the placenta was located here. Under these circumstances, I was quite satisfied that nothing promised security to the patient, who had already lost so much blood, but effectually plugging the vagina, the application of a broad abdominal bandage, and the large uterine compress; after these measures were completed, a draught, with one drachm of tincture of opium, was given. Some brandy and water, with suitable nutritious articles of diet, as eggs, &c., were administered.

I diligently watched her for some hours, and was assured that there was neither external nor internal bleeding. During this period, she continued gradually to improve; her countenance assumed a more natural expression; her lips had a more healthy hue; her pulse improved in tone; and her surface became warm. When I left her, she was enjoined strictly to keep in the recumbent position, and observe positive quietude.

When I called again to see her, I found her, upon the whole, better than I had anticipated, although she complained of "beating" and pain in the head. She had not slept. She was anxious to have the sponges removed, having a strong desire to pass urine, although some portion of this fluid must have dribbled away. On the withdrawal of the plug, there was no fresh bleeding. A spirituous lotion to be applied to the head, and her anodyne repeated. By keeping in bed for some time, and attention to her bowels, &c., she progressively amended.

In a month afterwards, she had again a slight attack of flooding, but which was soon arrested by rest, cold vinegar and water externally applied, cool air, and an acid mixture.

In a fortnight her labour came on, accompanied with flooding, which was considerable when I reached the house. The os uteri was now dilated to about the size of a crown piece, and felt soft and dilatable. I found a large slip of the placenta crossing over it; and by carrying the finger on to the right side and further within, I perceived the membranes, and through them the head of the child. As the pains were now frequent and strong, and the discharge continued, after placing on a regulating bandage, one end being fastened to the bed, and the other end held by the nurse, and tightened as required, I passed my hand, and first detached a considerable portion of the placenta, and then ruptured the membranes. The bandage was drawn so as equally and firmly to support and compress the uterus as its size lessened by contraction and the escape of the waters. The pains soon became stronger, and the head of the child shortly engaged itself within the os uteri, and the portion of loose placenta took a lateral position, allowing the child to pass by, and which was born alive in about three hours. The placenta, found lying loose in the vagina, was withdrawn. There was only the ordinary discharge of blood. The structure of this organ was unbroken.

Remarks.—This case is another example of the value of effectively plugging the vagina—no other expedient could have been had recourse to to save blood, and to insure a continuance of pregnancy. Forced delivery, in my judgment, was out of the question; but suppose such an operation had been rashly attempted, the lives of both the mother and the child would have been most likely sacrificed; and if the membranes had been ruptured under the existing organic state, the child's life would most likely have been lost, and there would have been no certainty of the bleeding being arrested. I detached the placenta as freely as I thought necessary for the passage of the child, as it is better systematically do this rather than risk the tearing of the structure of this organ by the force it must sustain at each pain when the os uteri has to be dilated by the head of the child after the membranes have been ruptured.

Case VIII.—I was sent for early in the morning, August 5, 1830, to Mrs. H., residing in Cambridge Street, Chorlton-on-Medlock, who was reported to be in a dangerous state from flooding. She was in the eighth month of her third pregnancy. She was in bed; and the discharge, which had come on without any known cause, was now excessive. She was very pale and faint. On a vaginal examination, I found the os uteri closed and firm; the cervix was as near as possible effaced. I suspected the placenta was located here, but could not be certain, as it would have been hazardous to carry the finger on to search for it. Under these circumstances, I concluded to plug the vagina. A bandage was first put round the body with a large compress over the uterus, placed under it, and tightly fastened. Pieces of sponge were successively introduced until the vagina was completely filled. A retaining bandage, passed between the thighs, was now applied. She had no pains or other signs of labour. One drachm of tincture of opium was administered.

I remained with the patient for some hours, and had her duly supplied with suitable support during this time. I carefully watched her, so as to ascertain whether there was either internal or external bleeding; and felt assured all was right, as the vital powers gradually improved.

When I again visited her in the evening, I found her much improved; there had not been the slightest discharge. As she complained of the plug, and could not pass her urine, I now very cautiously withdrew the sponges, being about fourteen hours from the time they were introduced. The last piece of sponge was coated with coagulated, but there was no fresh, blood. I did not leave the patient (as is my constant practice under these circumstances) for some time afterwards. One drachm of tincture of opium was ordered.

In the morning, I found her improved; she had slept well, but she was suffering from the effects of loss of blood, pain and throbbing in the head, &c. A spirituous lotion to be applied to the head. Suitable support, with some brandy, was recommended. She was kept in the recumbent position, and these symptoms gradually diminished, and without further interruption went on to the end of her pregnancy.

On September 14, I was again called to her, being in labour, and again flooding. The pains had commenced about an hour before I was sent for, and the discharge, at first trifling, increased as the pains became stronger. The blood now flowed rapidly. I found the os uteri soft and dilatable, and already dilated to the size of a crown piece. The placenta was felt through it, and by carrying the finger on the left side (the separated) of it, I touched the membranes and recognized the head of the child. I had now a bandage placed round the body of the patient, one end of which was firmly fixed to the mattress, whilst the other end was securely held by the nurse, which was to be gradually tightened, as I directed; the force being applied obliquely downwards. I now introduced my hand, and detached, to a considerable extent, the placenta, and afterwards ruptured the membranes. Whilst the water passed away, the bandage was drawn so as equally and firmly to press on the uterus. The pains increased in power, and soon became expulsatory. On a further examination, I found a large portion of the placenta hanging through, and the head of the child just engaging in the os uteri. At this time the hemorrhage had as nearly as possible ceased. The pains increased in frequency and power, and in about two hours and a half a living child was born. The placenta soon followed, and there was no further flooding. The uterus was felt well contracted. The bandage was adjusted and pinned.

On examining the placenta, the two portions which had left the uterus were readily distinguished: that which caused the first hemorrhage was firmer, more condensed, less vascular in appearance; that which led to the second attack, as well as that which was artificially detached, was fresher, more vascular, and small clots of blood were seen in its interstitial structure. Its uterine surface was entire and unbroken. She continued to slowly recover; but only required attention to diet, regulation of the bowels, and a strict observance of the recumbent posture.

Remarks.—The plug was most effectual in arresting the discharge, and doubtless enabled the patient safely to complete her pregnancy. In detaching the placenta, I carefully avoided lacerating its texture, and separated, as far as I could judge from its connection with the uterus, so much of it as would allow the child's head to pass without breaking up its structure. This precaution is important for the preservation of the child. (*Vide* "Remarks on the Sources of Hemorrhage in Cases of Placenta Prævia, &c."—*Lancet*, 1847, vol. i. p. 219; also 1847, vol. ii. p. 302.)

The bandage, which, for the sake of distinction, I described (to my lecture class) as the "regulating bandage," was here of the greatest advantage. By one end of it being held and drawn obliquely downwards as the uterus lessened itself in size, this organ was effectually and uniformly supported, and kept in the axis of the pelvis.

Case IX.—I was desired by Mr. F. to visit Mrs. ——, September 20, 1836, who resided in Hulm. She was at the latter end of the seventh month of her third pregnancy. She had been taken with flooding; but there was nothing to account for the accident; it happened whilst she was sitting quiet and alone. She had no pain. Mr. F. said cold applications had been freely applied; cool air admitted into the apartment; and he had prescribed an acid mixture, with tincture of opium. He also mentioned that he had plugged the vagina; but notwithstanding all this, the blood continued to flow. From her appearance, she had evidently lost a considerable quantity of blood, for she looked ghastly pale, very faint, and her pulse very frequent and feeble.

On examination, I found a moderate sized piece of sponge lying loosely midway in the vagina, the blood readily escaping past it. I at once withdrew it, and satisfied myself the os uteri was undilated. We agreed to plug the vagina again, and to put on a bandage with a compress under it. Some brandy and water was taken; the yolks of two eggs with brandy were afterwards administered; and every other means adopted to raise and keep up the depressed vital power. A dose of tincture of opium was given. After effectually plugging the vagina, every precaution was used to show whether there was any external bleeding; but it was completely arrested; and we had full assurance there was no internal hemorrhage. There being no feeling of increased distension, or sinking tendency; on the contrary, her pulse improved; her skin felt warmer; and there was an improvement in the countenance.

After the lapse of a considerable length of time, I left her, and again visited her in the evening. She was much improved; had no discharge; she complained of throbbing and pain in the head; she had dozed, but had not soundly slept. She had not passed her urine, and complained of an uncomfortable feeling from the sponges; but it was deemed right not to withdraw them. A spirituous lotion to be applied to the forehead. To take a draught with forty minims of the tincture of opium. We found her better in the morning; she had slept soundly. There had been no discharge; pulse less frequent and firmer. She complained less of her head; the plug was now withdrawn, and along with it only a little coagulated blood came away. She was now left under the care of her medical attendant, from whom I learned that she went on satisfactorily to the end of her pregnancy, and that her labour had propitiously ended. The child was alive.

Remarks.—This case is especially valuable in showing the difference between the use and the abuse of the plug. The woman doubtless was placed in a safe position, and after the arrest of the bleeding, went safely on to her full time by its right application; whilst, on the other hand, it is not improbable her life might have been lost by the ineffectual plan which had been adopted.

60. *Flooding before Delivery and on a New Principle and Method of Treatment of Placenta Prævia.*—Dr. Barnes read a paper on this subject before the Medical Society of London, Dec. 22, 1855. He passed in review the actual state of obstetric science and practice in relation to the pathology and treatment of placenta prævia. He showed that the prevailing belief was that so long as the delivery of the child was not effected there was no security against hemorrhage, and that hence the rule in practice of proceeding to forced delivery as early as practicable was almost universally inculcated, the only exception consisting in the more or less general substitution of the plan of totally detaching the placenta. The author thus showed that, while the practitioner was anxiously waiting for the moment when the dilatability of the cervix uteri would permit the passage of the hand, for the purpose of turning, the patient might perish of flooding; and that, therefore, in the most severe class of cases, those of central placenta, some other resource, some means of placing the patient in security against renewed flooding, before the full dilatation of the os, was eminently desirable. Dr. Barnes then explained the physiological course of a labour with placenta prævia, and the mode in which nature sometimes arrests the hemorrhage before the expulsion of the child. He illustrated, by the help of an ingenious and interesting diagram, that a stage of labour arrives when the recurrent contractions of the womb do not entail any further flooding; that the pains return in their usual course, with the usual effect of further dilating the os uteri and forwarding the labour, but without causing any further flooding; that the labour was in fact resolved into a natural one, and would be safely concluded by the natural powers. Reflection upon these cases had led Dr. Barnes to doubt the truth of the obstetric dogma, which declares that there is no security against hemorrhage so long as the presence of the liquor amnii or the child in the womb prevents full contraction. Dr. Barnes then unfolded the anatomical, physiological, and clinical facts which led him to the conclusion that, under proper restrictions, nature might in many cases be trusted to with more confidence than was generally believed. The clinical facts, he said, had come to him first, and led him to examine into the anatomical and physiological bearings of the case. He related cases in illustration, and quoted a commentary upon one of these cases from a memoir he had published (*Lancet*, 1847), in order to establish his priority in the enunciation of the views he now laid before the society; and adverted to the fact that he had, since the publication of that memoir, constantly taught, in his lectures on midwifery, the same doctrine; and stated that even the original of the diagram now exhibited, rudely sketched, was also figured in the memoir referred to. He had, therefore, believed his views to be original, and was surprised to find, in several numbers of the *Berlin Monatschrift für Geburtskunde* for the present year, a controversy between Dr. Cohen, Dr. Credé, and Professor Hohl, in which Dr. Cohen for the first time expounded similar views to his own, whilst Dr. Credé, referring to writings of 1853–4, also claimed them; and Professor Hohl assigned them to Dr. Zeitfuchs so far back as 1843. Dr. Barnes acknowledged with pleasure that Dr. Cohen's views of 1855 fully confirmed those put forth by himself in 1847; but he found in the writings of Credé and Zeitfuchs

nothing whatever to show that either had in the remotest degree possessed himself of the points in question. But Cohen had gone beyond the author in proposing a new operation based upon the physiological and clinical facts expounded. This operation consists in, 1, Determining the side of the uterus to which the smaller flap of the placenta is attached; 2, In rupturing the membranes and detaching the placenta from this half of its circumference; 3, Exciting uterine contraction; 4, Hooking finger over edge of placenta, tearing membranes from the freed border of the placenta; and, 5, In separating the placenta in a circumference of 190° to 200°. The greater half of the placenta, now freed from the dragging of the lesser half and membranes, is now drawn back, just as in placenta lateralis, with the uterus. From this moment there is no further danger. Cohen insists, like the author, on the impropriety of hastening labour unless urgent complications arise. Dr. Cohen refers to his experience to prove the efficacy of this method, but does not recite any cases in illustration. Dr. Barnes pointed out that the difference between his memoir and that of Dr. Cohen consisted simply in this: Cohen had, in 1855, carried forward the principle Dr. Barnes had enunciated in 1847, by proposing the artificial partial detachment of the placenta, instead of trusting, as Dr. Barnes had recommended in certain cases, the execution of this operation to the powers of nature. The author then quoted from Sir Charles Hill passages showing that the anatomical distribution and physiological action of the muscles of the uterus accorded with and explained the clinical facts observed in the course of intermissions and cessations of hemorrhage from placenta prævia as set forth by Dr. Barnes. The author then explained the mode and mechanism by which the hemorrhage in placenta prævia is arrested. The opening of the mouth of the womb, and the detachment of the placenta adhering to this part, are effected by the active contraction of the longitudinal muscles of the uterus. This active contraction shortens the cervix; when it intermits, a passive contraction goes on, which maintains or even increases the shortening of the cervix. This shortening necessarily compresses the torn mouths of the vessels, and checks the flooding caused by each successive detachment of fresh placenta, until the detachment has gone to the boundary line, beyond which point the further expansion of the cervix has no effect, and when all fear of flooding is at an end. It was not therefore necessary that the uterus should be empty in order to arrest the flooding. This arrest depended upon the contraction of the cervix, which went on, although the fundus and walls were prevented from contracting. Dr. Barnes submitted the following as some of the conclusions deducible from his researches:—

1. In cases of placenta prævia, the hemorrhage is sometimes arrested spontaneously before the complete detachment of the placenta, before the discharge of the liquor amnii, and consequently before the expulsion of the child or the pressure of its head against the cervix.

2. That this spontaneous arrest of the flooding is owing to the sealing up of the vessels torn by successive detachments of placenta, and the attainment of a stage of labour when no further detachment can take place until after delivery.

3. That dangerous and even fatal flooding sometimes occurs while the os uteri is still closed, and so undilatable as to render it impossible or inexpedient to have recourse to forced delivery.

4. That in such cases it is eminently desirable to possess some means of diminishing the hemorrhage until the hand can be passed through the os uteri.

5. The spontaneous or artificial detachment of the cervical portion of the placenta competes with two most formidable operations, dangerous to mother and child—forced delivery, and the total separation of the placenta. The new principle of treatment may, in many cases, supersede forced delivery altogether; since, the patient being secured against further flooding, to resort to turning when the flooding has ceased is an unnecessary proceeding, although the os uteri may admit of it. In many more cases, this principle will be the means of gaining the necessary time to admit of turning or other modes of forced delivery being performed with safety. In almost every case, it may supersede the practice of wholly detaching the placenta, since, the end in view being the

arrest of the flooding, it is better to detach only just so much of the placenta as will effect this end than by detaching all to destroy the child.

Dr. Barnes concluded by a particular exposition of the application of his views to the varieties of placenta prævia occurring in practice.

Dr. Murphy had no doubt that, in the case of a healthy woman, in whom the blood would coagulate rapidly, partial separation of the placenta would answer the desired purpose; but he thought it would not arrest the discharge in a feeble woman of anæmic character, in whom the blood would coagulate but slowly and imperfectly. In such a case, he should be afraid of profuse arterial hemorrhage from the uterus through the placenta itself.

Mr. I. Baker Brown readily subscribed to the propositions laid down by Dr. Barnes, which, he was satisfied, were based upon accurate observation. Of late years, he had been in the habit of following the plan which had been detailed. He had been lately called to a patient in labour who had been flooding all night. Finding it a case of partial placenta prævia, he ruptured the membrane, and detached a portion of the placenta; uterine action came on pretty strongly, and, after the first gush, which occurred invariably in such cases, the hemorrhage ceased, and the labour terminated naturally without an unfavourable symptom. He had seen many such cases terminating in the same manner. Much mischief was done by "meddlesome midwifery," and it was highly desirable to lay down laws, if possible, which should prevent the introduction of the hand into the uterus, and the frequent attempt to turn the child.—*Med. Times and Gaz.*, Dec. 22, 1855.

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61. *Placental Presentation.*—The following example of this is related (*Association Med. Journal*, Jan. 12, 1856), by M. BEECROFT. Mrs. H., aged 34 years, a weak, delicate woman, had had three living children. I visited first time April 1st, 1855, when she stated that she had been flooding for a few days, but the discharge was not very great: she said she was about a month from her time. I prescribed rest and astringents; and there was not much discharge until the night of the 12th, when she parted with a large quantity. The hemorrhage had ceased when I saw her; and, on a vaginal examination, I found that the os uteri just permitted the introduction of the finger. I detected, as I thought, a placental presentation. As there was no hemorrhage going on, I recommended a continuance of the previous treatment. All went on well until the 14th, when hemorrhage returned with great violence, and reduced her so much that, on finding the os uteri dilated to about the size of a shilling, and lax, I thought that I could deliver her without any great difficulty, and at once determined to operate.

As anticipated, I did not find the difficulty very great. By inserting the fingers separately, the os uteri kindly dilated, and I passed my hand without great force into the uterine cavity, turned and carefully brought away the child, which was alive, but very feeble, its body dragging the placenta along with it, as, on separating the child, a portion of it was visible, protruding through the os externum.

The poor woman bore the operation very well; but the hemorrhage still continued, a constant draining away of blood going on; and, although pressure was constantly kept up in the abdomen by myself and pupil, and though the womb felt small and contracted, and notwithstanding the application of cold, the introduction of the hand within the uterine cavity (which was scarcely admissible), the administration of ergot, opium, brandy, etc., she gradually sank, and died in somewhat less than three hours from delivery.

I was allowed to make a *post-mortem* examination, and found the uterus not larger than usual, its anterior containing nothing; it was very pale, with the exception of a few inches round the circumference of the os uteri, which presented a raised pile of bright red capillaries, against which I supposed the placenta had been placed. Here, in one spot, there was slight ecchymosis; and, meandering in the submucous tissue, there was a moderate sized vein, though I could not detect its open mouth. The whole of the walls of the inferior portion of the uterus were very thin, and apparently deficient in muscular development, which I thought might arise from the position of the placenta interfering with its growth.

62. *Inversion of the Uterus following Parturition.*—Two cases of this rare and alarming accident are recorded in the *Association Medical Jovrnal*, during the past year, one by Mr. W. B. BORHAM, and the second by Mr. C. LEONARD.

Mr. Borham's Case.—Mrs. H., aged 25, a fine strong woman, was delivered of her first child with the *funis twice twisted* round the child's neck, on January 31st, at 3 P. M., by Mrs. Collen, of Paddington Street, a midwife of considerable experience, after a natural labour of sixteen hours' duration. The pains occurred at rather longer intervals than usual, and were very forcing. About an hour after the child was born, I arrived in consequence of a hasty summons, when the patient presented the following state: The whole of the uterus, dragging a small portion of the posterior part of the vagina with it, was lying (like a scrotal hernia) without the os externum; it was covered with the deciduary and other membranes, and the placenta was entirely attached to its fundus. The patient was lying upon her back, with her knees bent up. She was pulseless, had difficulty of breathing, was cold, prostrated, and exhausted; in fact, in a state of collapse. The uterus had been exposed for three-quarters of an hour, and had become much contracted. I immediately detached the placenta by inserting the index finger of my right hand between it and the uterus, and then peeled off the membranes attached to it (those which spring from the placenta). The midwife now well greased my left arm and hand, with which I grasped the uterus, and returned it within the vagina. I then withdrew my hand a little, formed my fingers into a cone, reintroduced it, gently carrying the fundus before me until I had carried it up to a level with the patient's umbilicus, when I had the satisfaction of finding that the uterus had righted itself into its normal position in the pelvis. Its neck and os then commenced a gradual contraction on the fingers, when I carefully and steadily withdrew my hand, desiring the midwife at the same time to make pressure just above the pubes with her hand. After the withdrawal of mine, I had a saucer placed upon the lower part of the abdomen, and a bandage bound tightly over it.

During this time, which lasted about fifteen minutes, the patient was in a state of great exhaustion, and it was only by the aid of brandy that I could at all arouse her. I remained with her an hour, by which time she rallied considerably. I then left, prescribing for her a mixture of sulphuric acid, sulphuric ether, and camphor mixture, every two hours.

At ten o'clock I was again sent for, as a return was feared; but, on examining, I found it was only escaping, and I placed a sponge in the vagina.

Feb. 1. The patient remained in a very low state; the pulse was 150, and feeble; she was very thirsty; the discharge was moderate. She was ordered to continue the mixture.

2*d*. The pulse was 120. The patient was very excited, with peritonitis threatening. I ordered two grains of opium and five of calomel to be taken directly, and a saline mixture with prussic acid. The patient had a desire to micturate, and for the first time I desired her to be moved for that purpose, when she passed a great quantity of urine. She felt exhausted, but much relieved.

3*d*. The pulse was 110. She had had four very liquid stools in the night which produced faintness. She complained of much pain in the bowels, and was restless. The tongue was furred; there was a dragging or tearing pain in the bowels; the discharge was offensive and purulent. I ordered fifteen leeches to be applied to the epigastrium, and a poultice afterwards; I also prescribed gray and Dover's powders to be taken every three hours, and an effervescing saline draught with an excess of ammonia and prussic acid every four hours.

4*th*. She was better in every respect. The medicines were continued.

5*th*. She was progressing favourably.

She continued daily to get better. Her milk came at the ninth day; and I left her convalescent at the end of three weeks.

Remarks.—The midwife assured me that she did not use the slightest traction at the funis after the birth of the child, but that the uterus and attached membranes came out all at once with one pain about half an hour after the child was expelled; and she, thinking it a "tumour," desired I might be instantly sent for. The funis being twice convoluted round the child's neck greatly reduced its remaining length, and doubtless this circumstance assisted considerably in dragging down the fundus, particularly as the pains were described as "very forcing;" the fundus thus becoming cup-shaped from unavoidable traction, the whole uterus soon became inverted and expelled.

There is a division of opinion as to the advisability of detaching the placenta from an inverted womb before returning it. Much must of course depend upon the contracted state of this organ; the length of time it has been exposed, etc.; but I think the placenta should always be separated before returning the uterus, if the latter be in a *contracted state;* for the less the substance to be returned the easier is it accomplished. Nor need we fear hemorrhage, for the uterus being inverted would drag down the uterine arteries into its inverted cavity; they would become intussuscepted, the uterus contracting upon them, forming an artificial tourniquet; and thus the supply to the uterine sinuses would be cut off (as was the case in this instance, for there was no hemorrhage during the operation of detachment). I therefore cannot think, with some authorities, that the patient is sure speedily to die of profuse hemorrhage if the placenta be detached. On the other hand, if the uterus were in a very relaxed state, and its os well dilated or easily dilatable, the hemorrhage might indeed be great if the placenta were partly detached; and in such a state there would be little difficulty in returning the whole mass, and perhaps it would be advisable to do so. But in a case like my own it was desirable to return the uterus with as liltle addition to it as possible, owing to the contracted state of that tissue.

That the uterus should be *immediately* returned there cannot be two opinions; or its contraction would soon prevent its return. The diminished size of the os would prevent the fundus from returning through it to its normal position, and strangulation would ensue, with its evil consequences. That peritonitis ensued in my case is not to be wondered at, considering how the peritoneum must have been interfered with by such a sudden revulsion of its tissue. The favourable termination of the case will certainly add a good practical confirmation to the opinion of those who are in favour of removing the placenta before returning the uterus. The uterus did not return with a sudden jerk, such as is usually ascribed to such cases.

Mr. Leonard's Case.—The subject of this case was a lady, aged 34 years, a stout healthy person, who had previously had one child, stillborn, after a tedious labour, from absence of pains, requiring the application of the forceps.

April 25, 1855. For the last two days there has been some slight watery discharge, but no pains till 2 P. M. to-day. Her ordinary medical attendant was sent for at 4 P. M., and found the membranes ruptured, the os uteri fully dilated, and the head descending, the presentation being natural. The pains continued strong till the child was born, about 8¼ P. M. The child, a female, was very large, and living; no hemorrhage followed its expulsion. The funis was very short, twice round the neck, and so tightly strained, that it was impossible to relieve it, or even apply ligatures, the child being so closely confined to the body of the mother; it was therefore divided, when a portion was immediately retracted within the vagina. No pains followed; and, on examination in about twenty minutes, the insertion of the cord was felt very low down, and a strong expulsive effort was followed by the protrusion of a large mass, which proved to be the uterus inverted, with the placenta completely attached; this mass gradually increased in size, from hemorrhage occurring between the centre of the placenta and the uterus, the edges of the former remaining adherent. Whilst supporting this mass, it suddenly gave way about the centre, giving exit to a quantity of coagula and fluid blood. The patient now became very faint and exhausted.

At this time I saw her. On introducing the finger within the vagina, a hard mass was felt, which the finger could freely pass round, and which was the inverted vagina. I immediately detached the placenta, and the hemorrhage ceased, the uterus, which lay completely exposed, looking pale. I then returned it within the vagina, and introducing my right hand, grasped the fundus uteri, and gradually pushed it up within the os, restoring it to its normal position.

I kept my hand firmly pressed over the uterus for some time, and very little hemorrhage occurred. A dose of ergot was administered, and brandy and gruel given freely, as she continued faint for some time. She subsequently made a good recovery, sitting up for the first time on May 19th.

This was clearly a case of unavoidable inversion, induced by the traction exerted upon the uterus by an originally short funis, further shortened by the circumstances before mentioned, and which no interference could have prevented.

A third case has recently (Jan. 18, 1856) been communicated to the Western Medical and Surgical Society of London, by Dr. Ellis:—

The patient was a laundress, and confined with her seventh child, of temperate habits and good health. In her previous confinements, there had been generally some delay with the after-birth, which peculiarity had been well known to the midwife who attended her; in the present instance a stranger attended, and used force to remove the placenta. Sudden symptoms of collapse occurred, violent hemorrhage, pallor, delirium, and syncope. Mr. Ellis found her in such a condition, with a portion of the placenta unremoved. Upon examining her, he failed to find any tumour as usual in the abdomen, but the vagina was occupied with a firm mass, and the patient suffering the most severe expulsive pains. The symptoms were directly recognized as indicative of inversio uteri, and efforts were made to restore the organ. It was deemed expedient from the amount of blood which the patient had already lost to return the uterus with the adhering portions of the placenta attached to it; this was done, and the patient experienced a complete remission of all her symptoms, and from that time gradually recovered. At the present time she is quite well.—*Med. Times and Gaz.*, Feb. 16, 1856.

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63. *Rupture of Umbilical Cord.*—Examples of a very short umbilical cord are sometimes met with, but a case we find related by M. Schaffer, of Moselle, is certainly rare, in which the cord was so short (ten millimetres) that it was ruptured during delivery, causing hemorrhage and the death of the child. A woman, twenty-five years of age, healthy and well made, was seized with labour pains at six o'clock in the morning; when examined the os was thin and supple, dilated to the size of a shilling, the membrane protruding; the pains were energetic, but at long intervals. At ten o'clock the dilatation was almost complete, the membranes broke, and the head descended into the pelvis; here it remained in spite of the pains. It was then found, upon the doctor being sent for, that the head occupied the fourth position, the dilatation was complete, the pelvis well formed, and the external parts dilatable. After some time the doctor determined to employ the forceps and terminate the labour, as the head made no advance whatever. They were applied with care, but failed to overcome some resistance, which, however, after some time, suddenly ceased, and the head descended between the vulva; a strong pain soon delivered the head, with the face to the pubis, the rest of the body immediately followed. The child, a female, large and well formed, was very pale, and gave no signs of life, whilst its movements but a short time before were distinctly perceived. The cord was found torn off clean to the umbilicus; it was large and solid, its extremity presenting the remains of torn membrane. Every means were used in vain to reanimate the child; it was dead from loss of blood; the cord, which was never tied, did not furnish a single drop of blood. Upon turning to the mother she was found to be losing blood fast. No trace of a cord could be found, so the hand was introduced into the uterus and the placenta removed. When examined, it was found entire; but in the centre, where the cord should have been inserted, there existed a circular pit; the extremity of the cord which remained attached to the infant being applied to this, it was found it fit it exactly in size. Thus the cord could not have been more than ten millimetres in length.—*Dublin Hospital Gaz.*, Dec. 1, 1855, from *Gaz. des Hôpitaux.*

64. *Funis Presentation—Reduction.*—Dr. Keiller communicated the following interesting case of this to the Obstetrical Society of Edinburgh.

Dr. K. was called to Mrs. C., who was in hard labour with her second child, and in whom a large loop of the cord was found presenting before the head. Dr. K. visited her without any delay, and found that, although a very extensive portion of the cord was protruding from the external parts, it had not as yet altogether ceased to pulsate. The head had not yet entirely passed through the pelvic brim, and injurious pressure on the prolapsed cord was only observed to occur during the pains, which were very frequent and severe—so much so as to render it not altogether free from danger to attempt what, however, was successfully accomplished—*manual reduction of the cord.*

In the absence of any direct means of diminishing the (to the child) injurious expulsive force, or any instrumental means of hastening the passage of the head through the pelvis, Dr. K. proceeded, without delay, to return all the protruded portion of the cord above the presenting part of the child, which, he considered, cannot properly be accomplished without passing the hand up to the brim, and, if need be, displacing the head or raising it from the brim, *in the absence of a pain*, so as to make sufficient room for the complete reduction of the loop, which may have descended before or by the side of the head. After introducing the entire hand into the vagina, Dr. K. managed to get the cord reduced and kept up beyond the head, until the latter occupied the brim, so as to prevent any further descent of the cord.

The labour was soon afterwards completed, and the child (though for some time exhibiting symptoms of dangerous umbilical compression) was ultimately resuscitated.

Dr. K. stated that he had now saved several children by this mode of treatment, and which, he believed, would (like the present case) have been lost by other modes recommended by authors, such as the application of instruments (as the catheter, etc.), modes which he had on several occasions, but never successfully, tried. The most efficient instrument on all such occasions is that which we never require to send or wait for, viz: the HAND, by which we can in most cases succeed in pushing up the prolapsed cord, and ascertain that its reduction has been properly and efficiently accomplished.—*Edinburgh Med. Journ.*, Nov. 1855.

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65. *On the use of Potassio-Tartrate of Antimony in the form of Enema, in Obstetric Practice.* By James Young, M. D.—In a primipara, æt. 31, and of full habit, the pains had been strong and frequent for six hours, the os uteri was thin in the edges, hard and unyielding; and the external parts contracted and tender. Sixteen ounces of blood were taken from the arm, eight grains of Dover's powder were administered, and fomentations applied to the external parts. Under these remedies the pains ceased for six hours. When they returned they affected the back, and were frequent and regular. After continuing for six hours longer the os uteri was still thin in the edges, hard, and not dilated more than the size of a shilling; the external parts narrow and contracted.

Ergot was inadmissible under such circumstances. Reasoning from analogy on the effects of tartar emetic as a local irritant, when employed in the form of lotion or ointment, I conceived that temporary local stimulation of the uterus might be induced more directly from the rectum than through the medium of the stomach, and that subsequent relaxation might be produced in the surrounding parts without the production of nausea and general prostration. One grain of tartar emetic dissolved in six ounces of warm water and soap was given in the form of enema, not so warm as when given for the purpose of clearing out the bowels, that it might be longer retained, and to avoid being deceived by the relaxing effects of heat. One hour after the enema was given, there was a decided improvement on the rigid os uteri. The vagina became soft, and secreted mucus freely. The os uteri became thicker and softer in the edges, and the external parts began to relax, and dilate. At the end of one hour and twenty minutes after the antimonial enema was administered the delivery was easily accomplished.

Encouraged by the result of this case, I selected for after-experiment primiparæ, particularly the robust and plethoric, where most difficulty was to be anticipated.

In eight cases where the pains were weak, and the parts unyielding, it was of great benefit in quickening the pains, relaxing the parts, and expediting delivery, saving much suffering and protracted attendance.

It can then be used with safety in the early stages of labour, although the os uteri be thin in the edges and the soft parts firm and contracted. In multiparæ, when the parts are normal, the os uteri dilating slowly, and the pains weak, it will sharpen the latter, and thus shorten the duration of labour. Flooding did not occur in any case, nor was nausea or vomiting more troublesome than in the average of ordinary deliveries. In one case (multipara) there was pain in the abdomen after the placenta was removed, but not more than is often met with in ordinary after-pains. A cup of good tea was given to the mother as an antidote, and at the same time to refresh her. Being a considerable distance from my residence I left an opiate diaphoretic to be taken if the pain in the abdomen should return. On my next visit I was told that it was not necessary. None of the cases required any particular treatment.—*Monthly Journ. Med. Sci.*, Jan. 1856.

[Dr. Horatio R. Storer relates (*Boston Medical and Surgical Journal*, February, 1856) a case of protracted first stage of labour from rigidity of os uteri, in which the above mode of treatment seemed to have the best effects.]

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66. *Use of Chloroform in Childbirth.*—Dr. Murphy read a paper on this subject before the Medical Society of London, Jan. 26, 1856. He stated, in commencing, that he had not the slightest reason to deviate from the opinion he expressed, in 1848, of the extreme value of chloroform in relieving the sufferings of the parturient female, and in promoting her recovery. The author directed the attention of the Society to three points worthy of their reflection. 1st. The progressive effect of chloroform on the nervous system, from which he derived the safety of its application. 2d. The difference that exists in its effect on different constitutions, showing the importance of a guarded use of it. 3d. The remarkable disparity in the amount of suffering from the pains of labour which women experience when going through what is called "a natural labour," which proves the infinite value of this agent, not only in assuaging an amount of agony which overcomes the fortitude of women of the strongest resolution, but also in promoting their more rapid recovery. He mentioned, as the result of his own observation, that the nerves of sensation were first affected, and that pain may be relieved before chloroform acts on the brain, or impairs consciousness. The brain then becomes engaged, and mental power disturbed, causing giddiness, rambling, and ultimately sopor. At the same time, or nearly so, the reflex nerves manifest its influence. He did not wish to pass what he might call the first stage, the relief of pain, because he thought it quite sufficient for ordinary obstetric purposes. The profound stertorous sleep required for surgical operations he did not think necessary in midwifery. He described the effect of chloroform on a patient when used in this way, and for this purpose preferred inhalation by the mouth alone, as being safer. Such use of this anæsthetic might be considered inefficient, because the patient still suffers some pain. He (Dr. Murphy) found it quite the contrary, because the pain is as nothing compared with what she otherwise would have endured, and her recovery is always rapid. She does not suffer from the exhaustion which follows a severe labour, rendering the patient restless, and obliging the practitioner to employ opium to procure sleep. He looked upon chloroform, in this respect, as the most valuable assistant in the management of labour that has ever been discovered. The author alluded to the difference in the effect of chloroform on different constitutions. All women are not equally susceptible to its influence. With some, a few inhalations are sufficient to control all pain, and even put them to sleep; while others continue to inhale for a long time before they experience any relief. In these instances caution is necessary, which is very easily exercised if chloroform is given in the gradual manner stated. It is necessary to watch its action on the reflex nerves, and to withdraw the vapour

when they become affected. He (Dr. Murphy) thought the respiration and action of the uterus especially should be attended to. It is of importance to watch for stertor during the sleep of the patient, and not to mistake the cause of the short and feeble pains. The uterus is not paralyzed, as has been supposed; but the aid which it receives from the reflex muscles is diminished. In this, as in the former case, the sound sleep which follows labour perfectly restores the patient. The third variety is rarely met with, and is very perplexing. He related a case where chloroform seemed to increase the pains, although in the intervals the patient was in a profound sleep. When stertor was observed, he withdrew the vapor. The patient was safely delivered, slept for some time, awoke, and had no recollection of anything that occurred from the time she inhaled the chloroform. He attributed this effect to a kind of dream. What in other patients would cause incoherent rambling, here exaggerated the one idea, pain. The remarkable difference in the amount of suffering which women experience when going through natural labour proved the value of chloroform most clearly. Some suffer comparatively little; at no period of labour are the pains beyond their powers of endurance; chloroform is not, therefore, called for. But there are cases of a very opposite character, in which the patient is acutely sensitive, where even slight pains cause great distress, and where the more powerful pains become so intolerable, and cause such an amount of suffering, that the action of the uterus is often suspended. It is in such instances that the value of chloroform shines the most conspicuously, and it is here that the practitioner will find its aid most clearly unquestionable. He concluded by apologizing for an imperfect paper. He avoided entering upon, or replying to, the objections offered to its use, not only because he had already fully examined them, but he was unwilling to make this valuable agent a kind of battle-field for the collision of strong and decided opinions. It was in the power of every one to arrive at a just conclusion from their own experience. He entreated those who would follow this rational mode of investigation not to be led away from it by *post hoc ergo propter hoc* arguments; not to believe that all the well-known casualties of labour are caused by chloroform, because this agent happens to be administered; not to take second-hand histories of its effect, but as the members of a highly scientific profession are bound to do, to take nothing for granted, but examine and judge for themselves. He thought that there was nothing singular in the reception it has as yet met with in this great metropolis. It took fifteen years before gaslight triumphed in London. The light shone conspicuously wherever it was introduced, but it only made more manifest the prejudices and apprehensions of the public. It was declared to be most offensive, most dangerous; houses were blown to atoms by explosions of the gas, and the event was recorded with all the avidity of a death from chloroform. Still it continued to be used by its advocates; they gradually increased; at length its use became general, explosions were only recorded as unfortunate accidents, and now gaslight has obtained its triumph. It gives not only light, but heat; it supplies the place of coals as well as candles, and every house in London considers this noisome and most dangerous agent an indispensable requisite. He (Dr. Murphy) anticipated from chloroform the same career. It is now under its trial; but as it becomes better understood will be more generally used, and ultimately become as indispensable in the lying-in apartment.

Dr. Crisp stated that Dr. Murphy had made no allusion to the influence of the vapour, when inhaled by the parturient mother, on the new-born child. Such influence, he could not but believe must be highly deleterious; however administered, chloroform could never be depended upon, and its indiscriminate use in midwifery was greatly to be deprecated.—*Med. Times and Gaz.*, Feb. 2, 1856.

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67. *Puerperal Peritonitis in the Fœtus and new-born Child.*—M. Paul Lorain, in a thesis on puerperal fever, has traced the co-existence of peritonitis in the infant with puerperal fever in the mother. His opportunities of investigation were afforded him in the Maternity Hospital, in Paris, of which institution he was for some time an *interne.*

It is a striking fact, which indeed has not altogether escaped attention, that the greatest amount of mortality among newly born children is coincident with attacks of puerperal fever. M. Lorain found that out of 106 stillborn children, 20 had died from mechanical injury, or accident during labour; 2 from pemphigus, and 10 from intra-uterine peritonitis. Of 256 new-born children, who died at periods varying from a few hours to a few days after birth, 63 were premature and nonviable; and of the remaining 193, 50 died of peritonitis, either simple or complicated with erysipelas, meningitis, abscesses, etc.. 10 having all the symptoms of putrid infection. Further, he found that, in 30 deaths among newly born children from peritonitis, the mother also died from the same disease in 10 cases; while in 5 other cases the mothers had had puerperal affections, but had recovered.

Peritonitis is the only manifestation of the disease in the fœtus. In newly born children, it has been observed in the form of peritonitis, either simple or complicated with erysipelas, inflammation of the umbilical vein, meningitis, etc., or in the forms of meningitis, pleurisy, abscesses, gangrene, etc.; but the most common form is peritonitis. The mother and child may die of different forms of the disease; for instance, the mother may have meningitis, the infant peritonitis; the infant may die of peritonitis, and the mother of purulent infection, etc.

The principal characters of puerperal peritonitis in newly born children are thus described by M. Lorain:—

The face expresses suffering; the abdomen is tense, gives a tympanic sound, and appears very tender on pressure. Respiration is shallow, short, and frequent. The skin is yellow. The child cries incessantly. It has vomiting, and a bilious fluid escapes from the mouth and nostrils. The pulse is small, and much accelerated; there is generally constipation. The child refuses the breast, especially towards the end of life.

The progress of the disease is very rapid; it generally terminates (always fatally) in three or four days. Most of the children die in ten days after birth. M. Lorain observed only one which was a month old, and another which lived forty days.

One of the most important forms of the disease is the adynamic, characterized by torpor, somnolency, hemorrhage from serous and mucous surfaces, and scorbutic patches on the skin. In these cases, death sometimes occurs within forty-eight hours after birth.

The most usual complications of puerperal peritonitis in the infant are erysipelas, phlegmon, meningitis, and sometimes pleurisy. The symptoms of some of these, especially meningitis, occasionally supersede those of peritonitis.

The only premonitory symptoms are the restlessness of the child, and its plaintive cries. The disease advances so rapidly, that it is often first suspected only when it has attained its height.

The *post-mortem* appearances are characteristic. The jaundice, the great enlargement of the abdomen, the escape of green fluid from the nostrils, and the rapid putrefaction, render the bodies of those who have died of infantile peritonitis easily recognizable. The peritoneum contains an effusion of serous or sero-sanguineous fluid, rendered turbid by pus and false membranes; and the tunica vaginalis often contains effusions of the same nature. The false membranes have the same microscopic characters as in ordinary peritonitis; the pus is small in quantity. The spleen is often double its normal size; this has also been observed in peritonitis in the fœtus. The tissue of the organ presents no marked change. In some rare cases, there has been a morbid change in the liver. No change has ever been observed in the lymphatic system.

Of all the accompanying lesions, that of the umbilicus is most worthy of note. As soon as the febrile state supervenes, the umbilicus is placed in the condition of an amputated stump. The wound becomes gray and dirty, and does not tend to heal; the neighbouring vessels also suffer, and the coagula which form in them soften and break up. M. Lorain does not regard the affection of the umbilicus as the cause of the peritonitis.—*Gazette des Hôpitaux*, October 20th, 1855.

In relation to the above paper, Dr. BELLETRE, of Abbeville, has communicated the following facts to the *Gazette des Hôpitaux*, for November 10th, 1855:—

During an epidemic of puerperal fever which prevailed at Abbeville, in 1851, and in the beginning of 1852, fourteen women died within a few months: nine between the sixth and twelfth day after delivery, five before the end of the third day. In the first category, all the children born enjoyed good health during the earlier weeks after birth. In the second category, there was one abortion at three months, and one child was born dead; three were born alive, but although strong and healthy, they did not live longer than from 43 to 68 hours. Two were seized, six or seven hours after birth, with marked symptoms of peritonitis. The mothers had already perceived in themselves some symptoms of the disease towards the end of pregnancy. In both cases the umbilical cord was dry, and of a dull gray appearance. The third patient fell ill on the day after birth; it had at first peritonitis, which was soon followed by pleurisy, with adynamic symptoms.

M. Belletre also calls attention to the fact that an epidemic of puerperal fever appears to exercise some influence on non-pregnant females—a fact which has, indeed, been noticed by other observers. He relates three cases of peritonitis occurring, during an epidemic of metria, in females who were not pregnant. In one case the disease appeared after suppression of the catamenia. The other two patients had slight metrorrhagic attacks at intervals of a few months, ordinarily lasting a few weeks; and it was during one of these attacks that they were attacked with peritonitis. One of these two patients died, as did also the former one.—*Association Med. Journal*, Jan. 12, 1856.

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68. *Functional Derangement of the Liver as a Cause of Uterine Disease.*—Dr. MACKENZIE read a paper on this subject before the Medical Society of London, Dec. 8, 1855. He began by drawing attention to the importance of studying the constitutional origin of uterine diseases, believing them to be far more frequently dependent upon constitutional than local causes. In a series of papers published by him in 1852, he had dwelt upon the origin of uterine disease from disturbed states of the nervous system, when the exciting cause makes its impression upon the nervous centres, such as settled grief or anxiety, and impoverished or unhealthy states of the blood. He now proposed to resume the subject, by considering another mode in which the nervous system might be unfavourably impressed, and uterine disease equally result, viz: from severe or persistent disease or derangement of any of the more important organs of the body; and as none illustrated the principle more fully than the liver, both from its extensive sympathies and great liability to disorder, he had selected it as the subject for the evening's paper. Having indicated the general influence exercised by the liver upon all the processes of health and disease, he referred to its special influence upon the uterus, founded upon the intimate sympathy subsisting between these organs, etc., and showed, from statistical data, how frequently derangements of these organs co-exist. Contrary, however, to prevailing opinions, the facts he had collected clearly proved that the hepatic disease generally preceded, and probably occasioned the uterine, when both co-existed. He believed that it might do so in the three following ways: First, through the medium of the direct sympathy subsisting between the uterus and the liver; secondly, through the derangement of the assimilative processes, which invariably results from chronic hepatic disturbance; and, thirdly, through the debility of the nervous system, which, sooner or later, inevitably follows upon long-continued derangement of any important organ of the body. From the first of this series of causes could be deduced many uterine affections of a variable and casual character, such as hysteralgia, leucorrhœa, and menstrual irregularity; from the second, many functional and structural lesions of the uterus of a more fixed and persistent character, such as congestion and inflammatory conditions, indurations, hypertrophies, fibrous growths, certain forms of leucorrhœa, and rheumatic hysteralgia; from the third, a predisposition to uterine disease generally, the precise character and

nature of which would vary with the nature of the exciting and other occasional causes. In connection with this part of the subject, attention was directed to the generally depressed state of the nervous system which accompanies the majority of uterine affections; and this, from various facts referred to by the author, was regarded by him as being rather due to the coincident hepatic than uterine complaint. The latter had, however, received greater attention; because, whilst the liver was an organ of dull sensibility, the uterus, on the other hand, had extensive sympathies with the sensorial parts of the nervous system, and its functional and structural conditions admitted of the closest scrutiny. The author then proceeded to show how the pathological history of the more common uterine affections supported the views he had submitted to the Society, and concluded by adverting to the practical conclusions to be drawn from them. The treatment of these cases should, in his opinion, be conducted with reference to three principal indications: First, to restore the tone and functional activity of the liver by the persevering employment of small, undebilitating doses of mercury, keeping strictly within the tonic and stimulating range of the remedy; secondly, to improve the assimilative functions generally, by careful attention to dietetic and hygienic measures, together with various therapeutical means, which were cursorily alluded to; thirdly, to restore the tone and vigour of the nervous system, which had been impaired by the long continuance of hepatic derangement. The general means adapted to this purpose were treated of, and the author took occasion to lay before the Society some observations upon the remedial powers of amorphous phosphorus in certain affections of the uterine organs, attended with weakness and irritability of the nervous system. He had given it a large and extensive trial in these cases, and in some had found it remarkably beneficial. It could be given in doses averaging from ten to thirty grains, and, although insoluble, it readily diffused itself in water or any aqueous vehicle, and could be conveniently given in that way. It appeared to act as a direct tonic or stimulant upon the uterine system, and, when properly prepared, could be given without any risk or danger. He had given it with much success in certain cases of amenorrhœa, hysteria, and passive menorrhagia. He had known pregnancy to supervene upon its employment, after a lengthened period of sterility subsequently to marriage, and had found it useful in correcting the tendency to miscarriage when dependent upon morbid weakness or irritability of the uterine organs. Under these circumstances, he thought it worthy of a more extended trial, and recommended it confidently to the notice of the members of the Society.

With regard to the employment of ordinary phosphorus, Dr. M. had made many trials of it, and it was only when he had found it to be a very hazardous and dangerous remedy that he had been led to make trial of the amorphous phosphorus.—*Lancet*, Dec. 15, 1855.

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69. *Tinctura Ferri Muriatis in Uterine Hemorrhage.*—Dr. Von Schreier, of Hamburgh, places the greatest reliance on this preparation as a styptic, in cases of uterine hemorrhage. He affirms that he has never lost a case in which he has had recourse to its use. He employs it in the form of injections, containing from 50 to 100 drops to ℥iij of water. In cases of placenta prævia, he inserts a sponge-tent, saturated with the tincture, as high into the os uteri as possible, and by this means he not only arrests the hemorrhage, but after a period of from six to twelve hours, the os is so much dilated that artificial delivery can be accomplished with ease.—*Edinburgh Med. Journ.*, Jan. 1856, from *Monat-Schrift für Geburtskunde.* Bd. v. 1855.

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70. *Death of a Fœtus from Smallpox.*—M. Blot relates the following example of this to the Société de Biologie.

The mother of the little patient, previously in good health, and six months advanced in her second pregnancy, was attacked with smallpox, on the 17th of July, 1854. She had not been vaccinated, but the attack was not severe, and she recovered without any secondary fever. During her illness, the movements of the child were more continuous than they were before, but not so energetic; during her convalescence the same movements became more and more feeble, until they ceased altogether, and the child was felt to fall towards the side on which the mother happened to lay. Two days after this cessation labour came on unexpectedly, and the mother removed to the "Clinique d'Accouchements," where she was presently delivered of a male fœtus of the six and a half or seventh month, *covered with pustules of smallpox.* This fœtus presented unequivocal evidence of having been recently alive, and there was every reason to believe that it had had smallpox at the same time as its mother, and that it had died from this cause.—*Gaz. Med. de Paris*, Nov. 25, 1854.

MEDICAL JURISPRUDENCE AND TOXICOLOGY.

71. *On the Detection of Strychnia.*—By Marshall Hall, M. D. The detection of strychnia as a poison is, at this moment, of deep public interest.

When the *chemical* test fails, there remains, I think, another—the *physiological.* Having long studied the effects of strychnia on the animal economy (I have sent two papers on this subject to the Institute of France[1]) I am persuaded that these effects on the *most excitable* of the animal species are at once the most delicate and specific tests of this poison.

I have just performed two experiments, and only two, for want of materials for more.

I requested Mr. Lloyd Bullock, of Hanover Street, to dissolve one part of the acetate of strychnia in one thousand parts of distilled water, adding a drop or two of acetic acid.

I then took a frog, and having added to one ounce of water 1-100th part of a grain of the acetate of strychnia, placed the frog in this dilute solution. No effect having been produced, 1-100th of a grain of the acetate was carefully added. This having produced no effect, in another hour 1-100th of a grain of the acetate was again added, making the 3-100ths, or about the thirty-third part of a grain. In a few minutes, the frog became violently tetanic, and though taken out and washed, died in the course of the night.

I thus detected, in the most indubitable manner, one thirty-third part of a grain of the acetate of strychnia. It appeared to me that had more time been given to the experiment, a much minuter quantity would be detectible.

I placed the second[2] frog in one ounce of distilled water, to which I had added the 1-200th part of a grain of the acetate of strychnia. At the end of the first, the second, and the third hours, other similar additions were made, no symptoms of strychnism having appeared. At the end of the fifth hour, the frog having been exposed to the action of 1-50th part of a grain of the acetate of strychnia, tetanus came on, and under the same circumstances of removal and washing, as in the former experiment, proved fatal in its turn.

I thus detected 1-50th part of a grain of the poisonous salt by phenomena too vivid to admit of a moment's doubt; the animal, on the slightest touch, became seized with the most rigid general spasmodic, or, rather, tetanoid rigidity. And this phenomenon, alternating with perfect relaxation, was repeated again and again.

As the nerve and muscles of the frog's leg, properly prepared, have been very aptly designated as galvanoscopic, so the whole frog, properly employed, becomes strychnoscopic.

In cases of suspected poison from strychnia, the contents of the stomach and intestines, and the contents of the heart, bloodvessels, etc., must be severally and carefully evaporated, and made to act on lively frogs just taken from the ponds or mud. I need scarcely say that, taken in winter, the frog will prove more strychnoscopic than in summer, in the early morning than in the evening.

The *best* mode of performing the experiment also remains to be discovered, with all its details and precautions; an inquiry into which I propose to enter shortly. Meantime, this note may not be without its utility.

Princes Street, Hanover Square, *January*, 1856.

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[1] See the Comptes Rendus for June, 1847, and February, 1853.

[2] These frogs were not fresh from the pools.

P. S.—I have repeated my experiment. I placed one frog, fresh from the pools, in an ounce of water, containing the 1-50th part of a grain of the acetate of strychnia; a second in the same quantity of water, containing the 1-66th, a third containing 1-100th, and a fourth containing 1-200th. All became tetanic in two or three hours, except the third, which was a *female* (the others being males), which required a longer time.

The 1-200th part of a grain of the acetate of strychnia is, therefore, detectable by means of this test conferred by physiology.

We now placed a male frog in 1-400th part of a grain of the acetate of strychnia, dissolved in six drachms of water. In three hours and a half it became violently tetanic.

The fresh frog is, therefore, at this season, strychnoscopic of 1-400th part of a grain of the acetate of strychnia, and probably to a much minuter quantity, which ulterior experiment must show.

In two other experiments, the 1-500th and the 1-1000th of a grain of the acetate of strychnia were detected.—*Lancet,* January 12, 1856.

72. *Poisonous Properties of Brine.* By M. Reynal.—The brine obtained from the process of salting various kinds of meat and fish is used by the lower classes in France as a condiment in place of common salt, and by farriers as a remedy for the diseases of domestic animals. Instances of poisoning, however, from its use having been noted in Germany, M. Reynal proceeded to investigate its action, and from a series of experiments detailed, draws the following conclusions: 1. That three or four months after its preparation, it acquires poisonous properties. 2. That the mean poisonous dose for the horse is two litres; for the hog, half a litre; and for the dog, one to two décilitres. 3. That in less doses it produces vomiting in the dog and hog. 4. That the employment of this substance mixed with the food, continued for a certain time, even in small quantity, may be fatal. These facts are important, when it is recollected that smoked meats and sausages have sometimes exhibited poisonous properties.—E. Ballard, in *B. and F. Med.-Ch. Rev.,* Jan. 1856.

MISCELLANEOUS.

73. *On the Chemical Conditions of Cholera Atmospheres.* By Robert Dundas Thomson, M. D., F. R. S. L. & E., &c. &c.—The chemical conditions of cholera atmospheres is a question of intense interest in the subject of public health; but with the exception of the unpublished experiments of Dr. Prout, during the epidemic of 1832, comparatively little attention appears to have been bestowed on it. One of the most striking circumstances connected with the occurrence of the disease is, that no change very palpable to the senses prevails; and it has even been remarked, that the weather has usually been exceedingly agreeable. In London, at St. Thomas's Hospital, the neighbourhood of which afforded a large supply of cholera cases, the relative weight of the air in August, 1854—a cholera month—and in August, 1855, when the metropolis was in an exceedingly healthy condition, is exhibited in the following table in grains per cubic foot:—

1854. Week ending	Weight of cubic foot in grains.	1855. Week ending	Weight of cubic foot in grains.
Aug. 5th	522.9	Aug. 4th	516.9
12th	526.7	11th	524.3
19th	525.	18th	525.9
26th	523.5	25th	519.2
Sept. 2d	525.2	Sept. 1st	523.0
9th	530.3	8th	531.6
Mean	525.6	Mean	523.5

The result, as deduced from this table, which has been calculated approximately from the barometric pressure, dry and wet bulb thermometers, is analogous to that obtained by Dr. Prout, in 1832, as I was informed by himself. Corresponding observations have been made by Mr. Glaisher, at Greenwich, and the same conclusions arrived at; from which it would appear that this superior weight of a given bulk of common air was not a local phenomenon, but was diffused to a considerable distance.

Another character distinguishing September, 1854, from the corresponding period of 1855, was the absence of any atmospheric action on ozone test-paper in the former season; while during 1855, the oxidizing influence of the air has never been absent at St. Thomas's Hospital. During September, 1854, however, when no ozone could be detected in London, its action was sometimes faint, and often very strongly marked, at Lewisham, near Greenwich. Throughout the same periods the air was exceedingly stagnant; and it has since been observed by Mr. Glaisher, and also at Vienna, that rapid atmospheric movement is pretty generally accompanied by an oxidizing condition of the air.

With reference to the chemical composition of the atmospheres of inhabited localities and malarious districts, experiments have usually been conducted on the constitution of the gases which enter into the composition of the air. But the results seem to have thrown little light on the possibility of the production from such causes of any disease characterized by a regular sequence of symptoms. So far as our knowledge warrants, gases can either act only as asphyxiating media by the exclusion of oxygen, or as slow or rapid poisons. The cause capable of inducing disease formed on a peculiar type, analogy leads us to infer, must be in an organized condition, either in a solid form, or in a finely diffused or vaporific state. The fact observed, that in malarious atmospheres sulphuric acid speedily becomes black, also points to the propriety of examining the air in such situations, with the view of filtering from it solid or condensible matter. In the epidemic of 1849–50, I examined the exterior air of an infected district with this object in view to the extent of many cubic feet; but the result was comparatively negative, and led to the inference that the examination of large masses of air could alone hold out any prospect of a successful issue.

For this purpose, in 1854, air was passed through carefully prepared distilled water, contained in Wolfe's bottles, by means of a large aspirating apparatus, of the capacity of sixteen cubic feet, which was kept constantly in action during the day for several months. Occasionally freezing mixtures were applied to portions of the apparatus, and a tube filled with pumice moistened with sulphuric acid, placed near the aspirator, completed the series. A range of glass tubes conducted the air from a cholera ward into the aspirator. The ward was 32 feet long, 20 wide, and 9 high. The air was drawn from the centre of the ward, near the ceiling; and when the apartment was filled with cholera patients, the air, after traversing several layers of distilled water, speedily charred the sulphuric acid, and deposited a variety of solids in all the Wolfe's bottles, which could even be detected in some measure by the eye. The objects consisted of blue and red cotton fibres from the dresses of the inmates, portions of hair, wool, fungi, sporules of fungi, abundance of vibriones, or lower forms of animal life, with particles of silica and dirt. In this and in all the experiments conducted on the air of closed apartments, the distilled water was rendered strongly acid, from the presence of sulphuric and sulphurous acids, derived from the products of gas and coal combustion. The distilled water used in these experiments was boiled for some time previous to being introduced into the apparatus, and was divided into two portions, one part being placed in a stoppered bottle, beside the Wolfe's bottles, through which the air was conducted, the sediment, if any, being afterwards examined and compared with that resulting from the experiment. When the ward was only partially filled, vegetable epiderm, vegetable cellular tissue, fragments of cotton, linen, vegetable hairs, sponge spiculæ, minute fungi, spiral vessels, sporules, spore cases, animal epithelium, oil-globules, and silicious particles were conspicuous, while vibriones were entirely absent, or at least mere traces could be discriminated. This is an interesting result, since in the first case only 98.6 cubic feet were examined, and of the partially empty ward 240 cubic feet passed through the apparatus. When the ward was empty, cotton fibrés, wool, a trace of fungus, with carbonaceous and silicious particles, were alone observable, the amount of air examined being 304 cubic feet. The air external to the ward, and in the immediate neighbourhood, afforded, from 560 cubic feet, one cotton fibre, one of wool, a crystalline body, probably a sponge spicula, sporules, beautiful mycelia of fungi in various stages of development, and some carbonaceous matter. The distilled water, in this instance, likewise yielded a strongly acid reaction, produced by sulphur acids. The possible influence of sewer atmospheres predicted interesting results from an examination of such air; and accordingly, it was found that the predominating feature of this experiment was animal life, in the form of swarms of vibriones, in various stages of advancement. The chemical reaction in this case, unlike that in the preceding experiments, was invariably alkaline, due to the evolution of ammonia from the nitrogenous matters contained in the sewage liquors. These experiments render it sufficiently obvious, that organic living bodies constantly surround us in close apartments, and particularly that animal matter, under certain circumstances, exists in the air. It is scarcely legitimate to infer, that the absence from the air of matters capable of communicating cholera has been proved by these experiments, since it is certain that nitrogenous materials, distinct from the germs of vibriones, must have been present, to supply food to these living beings. The researches show, that foreign animal matter, injurious to health, may speedily be concentrated in certain localities, which will undoubtedly assist, in conjunction with meteorological conditions, in the production and propagation of disease. Pathological investigation, carefully conducted by my colleague, Mr. Rainey, detected, in one case, an entozoon in the glottis, the only analogues of which have hitherto been found in the substance of the muscles of animals, a fact which would seem to indicate that the germ of this creature had been derived from the atmosphere, or at least directly from external sources. Careful pathological examination failed to detect in the mouth or air-passages sporules, germs, or living beings, in those patients who died of cholera. The experiments of Mr. Rainey prove that organic solutions readily yield a soil for the growth of such atmospheric sporules as were detected in these investigations; and that when such solutions are brought only in contact with filtered atmospheric air, they are not attacked by mouldy growths. For a detail of the following interesting experiments, I am indebted to Mr. Rainey; they may be cited as striking evidence against the theory of equivocal generation, and as bearing upon the improbable theory of the possible production of disease by the agency of fungi.

"The decoction which is found to answer best is a saturated solution of nutgalls and alum, made by boiling these two substances, in a larger quantity than can be dissolved, in water for an hour or two. If some of this clear solution be set aside whilst hot, in a bottle, covered merely with a piece of paper to keep out the dust, fungi will in a few days be observed to form in it, provided the temperature be sufficiently high for that purpose. This experiment will succeed very well during the summer months.

"If the solution be very strong, the fungi will be apparent first on the surface; but if weak, their mycelia will form first at the bottom of the phial, and, gradually accumulating, they will reach the surface, and the fungi will become developed. In the experiment which was made, this fact was ascertained, and repeated merely to show that the solution which was afterwards employed was capable, on exposure to a small quantity of air, of developing such fungi.

"Next, a quantity of this same solution, after having been boiled for half an hour, was put, whilst hot, into a wide-mouthed glass jar, and carefully covered over with a piece of thick bladder, every part of which was kept in contact with the solution, so that no air could possibly get into the vessel. This was next securely tied down, and the jar inverted, and suspended by a piece of string, with the mouth downwards, for several months. The first effect which followed was, as might have been anticipated, the pressing in of the bladder in consequence of the diminution of the bulk of the fluid, which was made very tense and concave on its exposed surface. After this, air gradually entered the jar, and the fluid diminished in quantity. At first the diminution which took place from day to day was apparent, but after it had been suspended for a month or two, it took place much more slowly; however, after some months, half the fluid had escaped, and its place had been taken up by the air, which could be seen to be accumulated in bubbles on the surface of the fluid, at the upper part of the jar. Now, the remarkable part of this experiment is, that no organic bodies ever form on the surface of the fluid in the jar, although the quantity of air within it may be almost sufficient to fill it, in consequence of nearly the whole of the fluid having evaporated. In the experiments performed, the fluid in the vessel closed with the bladder has been the same as that contained in the phials, as first mentioned, and they have all been in the same apartment; so that the difference in the conditions under which the fluid in the jar and that in the bottle was placed is, that the air in contact with the former had been filtered, as it were, through a coriaceous membrane, the contact of the tannin of the galls with the bladder having converted it into a kind of leather, while that in the bottles was exposed to air under ordinary circumstances. Hence, as no vegetable growths are formed in the fluid exposed to the air in the jar, it seems that a something has been abstracted from it by the mechanical process of filtration to which it had been subjected, which existed in the air of the apartment, and which had access to the solution in the open bottles; for if the fungi which were formed in the first set of experiments had been the result of some process by which living bodies could be produced *de novo* out of dead matter, the organic bodies ought also to have been formed in the jar, as the fluid was the same, and the air in contact with it also the same, with the difference above mentioned; and therefore, on this supposition, the effect ought to have been the same also; but as this was not the case, the legitimate inference is, that the fungi which were found on the surface of the solution in the bottle were not the result of equivocal generation, but the developed germs of plants floating in the air, and brought in contact with the solution, which formed a medium favourable for their development. The process by which the air enters the suspended jar is not simply due to its mechanical filtration through the porous tissue of the bladder, but it must first become intimately combined with, or dissolved in, the fluid on its exposed surface, and then, by diffusion, become mixed with that in the interstices of the tissue of the opposite side, and thus gain access to the interior of the jar, where an imperfect vacuum being formed, the air will be under a less pressure, and thus it will be made to expand, and to disentangle itself with the fluid in the bottom part of the jar, and ascend to the top. One part of it will, however, remain until the solution is almost saturated with air; after which, the process will proceed very slowly. That such is the case is evident, for after a large quantity of fluid has escaped, the further diminution is so gradual, that the loss it sustains in a month or two is scarcely appreciable."—*Lancet*, Jan. 19, 1856.

AMERICAN INTELLIGENCE.

ORIGINAL COMMUNICATIONS.

Poisoning by Strychnia—treated with Sweet Oil. By S. A. Gus. Shaw, M. D.—March 7, 1852, I was called to see a negro woman belonging to R. M. Hannay, of Rock Island, Texas; found her, on my arrival, about six o'clock in the evening, in convulsions, with slight rigidity; she was very sensible to external impressions, the contact of the cup to the lips being sufficient to produce a paroxysm requiring four negro men to confine her to the bed, lasting two or three minutes; the paroxysms occurred every five minutes when she was left perfectly quiet. The least movement or touch was sufficient to renew them immediately. The pulse unchanged; inspiration deep; anxiety; heat of the stomach, and a choking sensation in the throat. I had administered strychnia a few days before in a case of paralysis of the arm, and was struck with the analogy of the contractions with the effect produced by that article. I administered a half bottle of sweet oil, which she vomited; repeated it immediately, which she retained five minutes, and vomited; repeated again, which she retained, perhaps, ten or fifteen minutes, and again vomited. On stepping out of the cabin, I found three dogs in the same condition, which was immediately accounted for, as they had lapped up the oil vomited by the girl. By this time the girl could speak without bringing on the paroxysm, and informed us that, about four o'clock, she had found a piece of dried beef in the cabin, which she tasted of, and finding it extremely bitter, gave it to her children. I immediately stepped to the crib where they lay, and found one of two years in the same condition in which the mother had been. I gave the oil which had operated so happily, and had the pleasure of finding them out of danger at about twelve o'clock, and returned home. The woman was in the field at work next morning at ten o'clock A. M. When I paid my visit during the evening, she had a slight paroxysm in the field, and was again treated with the oil, and completely relieved. No bad effect was produced. No change, except an increase of appetite, could be perceived. Both recovered. The three dogs died before I left, at twelve o'clock. A fourth dog was taken, and saved by the oil. The facts in the case were these: Mr. Hannay had set baits for wolves during the winter, which troubled him, and this dried beef was one of them, and contained not less than ten or fifteen grains of sulphate of strychnia. It must have been in the stomach one hour before she was known to be sick. Mr. Hannay gave her a dose of oil (castor) at once, which no doubt protected the stomach and prevented the absorption of the poison in a dangerous quantity, until my arrival. The negro woman took, in all, 3½ bottles olive oil; the child nearly 1 bottle.

Taussé Point, St. Martin's, La., June 6, 1854.

Turning in Puerperal Convulsions.—By Wm. G. Barnett, Tyrone Mills, Fayette County, Pa. Mrs. M——, a healthy woman, about 20 years of age, was seized with convulsions about the expected time of her first accouchement.

For a day or two previously there had been premonitory symptoms, such as occasional wandering of mind, vertigo, headache, etc. At 1 o'clock A. M., she was taken with a powerful convulsion, and immediately lost consciousness. At 4 o'clock I first saw her, when I found her with profound coma, violent convulsions occurring at intervals of fifteen minutes. The pulse was natural. On examination, I found the mouth of the womb slightly open. It could not, however, be clearly ascertained that there were any regular parturient contractions. The patient was bled to the amount of twenty-four ounces; the head and shoulders were elevated; cold applications were made to the head, and hot to the lower extremities. As the woman had come to her time, and the mouth of the womb was slightly opened, the accession of labour was anxiously awaited. The convulsions continued with unabated severity. About 11 o'clock A. M., ergot was administered. At 1 o'clock, the mouth of the womb was dilated to the size of half a dollar, and the labour was evidently progressing. The convulsions had increased in severity until they were almost uninterrupted. The pulse was 150 to the minute; the breathing 50 or 60. From the first attack, the coma was profound. It was evident that the contractions of the womb could not be relied on to terminate the labour in less than three or four hours. I concluded that speedy delivery would afford the woman the only chance for her life. This, owing to the state of the mouth of the womb, could be effected in no other way than by turning. Accordingly, the woman was placed on her right side, near the edge of the bed, the hand introduced with but slight difficulty, the feet brought down, and the delivery accomplished. During this operation, which occupied perhaps half an hour, it was made manifest that my want of confidence in the contractions of the womb was not miscalculated. Although they were waited for, and in this way the conclusion of the operation was somewhat delayed, yet they afforded very little aid in the delivery. The child had died probably soon after the beginning of the convulsions.

Although, at the commencement of the operation, the convulsions were almost uninterrupted, they ceased soon after the introduction of the hand, and did not again recur, except that there was one on the following morning. After the delivery, blood was drawn freely by cups from behind the ears, a brisk purge of compound powder of jalap was administered, and the remedies before mentioned were continued. In a few hours, the pulse fell to its natural standard, the coma gradually disappeared, and in the course of three or four days the patient was rational, and as well as women usually are so soon after delivery.

I have thought the case worth recording as an instance of an exception to the general rule, that we ought not to attempt turning in puerperal convulsions. In this case, owing to the state of the mouth of the womb, neither evisceration nor the use of the forceps was admissible. Had I, influenced by the fear of increasing the irritation in the womb by the introduction of the hand, waited until the mouth of the womb was sufficiently open to admit of craniotomy, or of the application of forceps, the woman's life would, in all probability, have been lost. Two or three hours would have elapsed before such a state of things could have taken place, and in that time such changes would probably have occurred in the nervous centres as would have prevented recovery. At least it is certain that neither the introduction of the hand nor the manipulations of delivery increased the irritation. On the contrary, these appeared to subvert the morbid irritation that was going on, for the convulsions ceased during the operation.

In cases of puerperal convulsions that are very urgent, and rapidly hastening to a fatal termination; in which the mouth of the womb is just sufficiently open to admit of turning, and in which it is evident that nature cannot be trusted for speedy delivery, are we not justifiable in resorting to turning?

Two Children Born with an interval of Nine Months and Ten Days.—Dr. Geo. W. Lewis, of Loydeville, Clark County, Ky., writes to us that, on the 15th of April, 1853, he attended a woman in labour, and delivered her of a small, weakly child, which died in the course of a few hours. Again, on the 25th of January, 1854, he attended the same woman in labour, and delivered her of a stout, healthy child, apparently born at full time, and who did well. The period between her two accouchements was exactly nine months and ten days.

Letter to the Editor from Dr. James D. Gillespie.—*Sir:* My attention has been lately directed to a communication in your Journal for October, 1855, from Dr. H. Storer, relative to a case of diseased elbow-joint, formerly reported in the *Journal.* That gentleman, at the risk of exposing himself to the imputation of *cacoëthes scribendi,* has thought fit again to revive the subject, and though I am unwilling to carry on the controversy, I trust you will, in courtesy, give admission in your pages to what I fully intend to be a final reply.

The question really at issue betwixt us is, whether the short criticism appended to the case, as extracted from the records of the Boston Society for Medical Improvement, was justifiable under the circumstances? With the exception of the word *malpractice,* which I regret having used, as it led to misinterpretation of my meaning, and which I have already explained was intended merely to represent injudicious practice, I still adhere to that criticism. I again affirm that the report of the case was calculated to mislead, and I cannot accept the explanation now offered, that it was a mere extract from records intended exclusively for the benefit of a Society, composed only of "*the best men in Boston.*" If such were the case, why give it to the general public? Why make them pay for what could be of but little value to them, what might possibly lead them astray, and could only be thoroughly appreciated by surely a very small portion of the community, to wit, "*the best men in Boston?*"

In justice to Dr. Mason Warren, I am bound to admit that the subsequent explanations he has offered in a great measure justify the operation he adopted, but I cannot accept the statement he has made in conjunction with Dr. H. Storer, that the original report of the case sufficiently indicated that the proper course had been pursued. For the proof of this I am mainly referred to three points mentioned in the report: first, that the lungs were tuberculous; second, that the arm, in a single night, became *almost* paralyzed, and therefore useless; and, third, that the patient earnestly requested amputation.

1. The first point can be easily disposed of. Tuberculous lungs may contraindicate the employment of any operation, but should not, unless under very special circumstances, cause the substitution of amputation for resection. Reasons for the preference should most certainly have been given.

2. The second argument, though plausible, can be shown to be utterly untenable. We are told "the forearm remained for a time fixed in a bent position on the arm, but suddenly, four months ago, in a single night became

extended, and has hung in that position entirely immovable and useless since.[1] Again: having in a single night fallen from a flexed position *almost* paralyzed."[2]

From this we are led to infer, that *almost* paralysis of the muscles had taken place, and therefore, they being useless, no benefit could result from resection. But is that the true explanation of this pathological fact? Is it voluntary contraction of the muscles which keeps the forearm almost immovably flexed on the arm in disease of the elbow-joint? Such is not the view I can entertain. The swelling and adhesions, or new bony formations, formed during the progress of this tedious disease, are what constitute the immobility of the joint, and I have no doubt it was the giving way of these adhesions that caused the sudden extension of the limb, and almost paralysis, referred to by Dr. Warren. This conclusion is supported by the fact stated in the report, that the joint was found to be filled with pus. That such an occurrence as the sudden extension of the limb constitutes any contraindication to resection of the joint, I deny. We are also told that fatty degeneration of the muscles was present—but is that an uncommon event when a limb has been for upwards of two years perfectly useless?—and are we to adopt the alternative of amputation because we suspect such a contingency?

3. The limb is said to have been removed at the urgent request of the patient. In my former letter I entered fully on this question, so all that need now be said on this point is, that we are left in glorious uncertainty as to whether resection of the joint was ever proposed to the unfortunate patient, for such an operation is not even delicately hinted at in the report which has caused so much misunderstanding and annoyance.

In conclusion, allow me to observe that though the subsequent explanations of Dr. Mason Warren bear evidence that he had contemplated and rejected as inadmissible excision of the joint, the merits of the case, so far as the obnoxious criticism is concerned, can solely be decided by a consideration of the report in the *American Journal* for October, 1854, and I still assert that, in my humble opinion, no contraindication to the usual operation for disease of the elbow-joint can there be found.

I am your obedient servant,
JAMES D. GILLESPIE, M. D., F. R. C. S. E.,
Assis't Surgeon to the Royal Infirmary, Edinburgh.

EDINBURGH, February 11, 1856.

DOMESTIC SUMMARY.

On the Functions of different parts of the Internal Ear.—By SAMUEL JACKSON, M. D., Professor of Physiology in the University of Pennsylvania.

The semicircular canals have no direct agency in the production of sound or hearing. They contain no nervous structure: no portion of the acoustic nerve reaches them. They are small appendages to the vestibule, opening into it and the ampullæ. The membranous canals, like the membranous vestibule, are floated in a fluid, the perilymph, and are filled with a similar fluid, the endolymph. The membranous structure constitutes the essential solid portion of the organ of hearing. It is nowhere in direct contact with the osseous walls of the corresponding cavities excavated in the temporal bone. The perilymph is interposed between the membranous vestibule, the semicircular canals, and the surrounding osseous walls. In the Petromyzon, this membranous structure (vestibule and semicircular canals) is contained in a common cavity, uninclosed in corresponding excavations in bone substance.[1] As Müller observes, this is "a fact of great physiological importance.' It proves the membranous portion of the apparatus of hearing and its fluid to be independent of the bony structure in the excitation of the sense of sound or hearing.

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[1] American Journal of Medical Sciences, October, 1854.

[2] Boston Medical and Surgical Journal, July, 1855.

The semicircular canals are evidently intended to perfect the sense of hearing or sound, as executed in its most complete manifestations, in the higher development of this apparatus of sense in man and the superior animals.

The hypothesis of Scarpa has been adopted as the most plausible in this point of view. He supposed the semicircular canals to be intended to increase the intensity of the sonorous impressions on the acoustic nerve, and thus to make hearing more distinct. They effect this operation by receiving and collecting the vibrations of the solid parietes of the cranium transmitted to the lymph-fluid, and through it to the nervous expansion of the acoustic nerve.

This hypothesis cannot be entertained. In the first place, it is very doubtful whether the aerial vibrations, in ordinary hearing, can or do communicate vibrations to the hard parts of the cranium. When a light carriage passes rapidly over the rough pavement with a sharp, rattling noise, if the ears be completely closed, not a sound is heard; nor is a single note of a large orchestra to be distinguished when the ears are pressed with the fingers. When sound is attended with concussion, a noise may then be distinguished; but this differs from the ordinary sense of hearing. If vibrations are excited in the solid parts of the cranium by sonorous vibrations of the air, they are obviously too feeble to make an impression on the nerves of sense, and incapable of reinforcing the vibrations transmitted through the stapes.

In the second place, vibrations, if excited in the lymph-fluid of the semicircular canals, would move in a direction the reverse of the molecular vibrations of the lymph-fluid of the vestibule and ampullæ, the real excitors of the sense of hearing or sound. These vibrations are transmitted through the fenestra ovalis by the stapes, and radiate from that point in expanding waves through the vestibular lymph-fluid into the ampullæ and semicircular canals. Vibrations proceeding from the solid walls of the semicircular canals, to reach the nerve expansions, would come in conflict with those proceeding from the stapes, and either interference, and consequent suppression and silence would ensue, or the effect of an echo, or noise, or simple sound be the result. The hypothesis of Scarpa, it appears to me, cannot be sustained, though ably advocated by Müller.

The hypothesis that assigns to the semicircular canals the perception of the direction of sound does not merit an investigation. The notion of the direction of sound, like that of distance, is a mental action; a conclusion to which the mind arrives, from certain phenomena or facts acquired by experience.

As to the manner in which the semicircular canals perfect the sense of hearing, my conclusion is the opposite to that of Scarpa. Instead of increasing the sonorous undulations or vibrations of the lymph of the vestibule, the immediate excitants of the sense of hearing, they serve to suppress them. They arrest the waves of reflexion which would necessarily occur in a simple cavity, wholly limited by plane surfaces, as the vestibule would be without these appendages. Such is the rudimentary vestibule or internal ear of the invertebrata. The consequence of reflected undulating vibrations, maintained in the labyrinthic fluid, would be the production of mere sound or noise of different intensities. The perception of the immense number of fine and delicate tones, and other qualities of sound of which the ear has cognizance, would be utterly impossible in the confusion of sonorous vibrations in the fluid of the labyrinth continuously reflected to and fro, unless some provision is made for their suppression. The molecules of a fluid contained in a closed vessel continue in undulatory vibration until the impetus exciting their motion is expended or suppressed. The semicircular canals accomplish this purpose. They are, in the apparatus of hearing, what the pigmentum nigrum of the choroid coat is in that of vision.

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[1] "Muller's Physiology," Baly's translation, vol. ii. p. 1288.

The two senses and their apparatus are homologous. The essential phenomena and laws of each are identical. The knowledge of those of the one sense demonstrates those of the other. The conditions of perfect vision and perfect hearing are the same. They are, for vision: 1st. The existence of separate, independent, sensitive spaces or sections of the retina for distinct images and perceptions of visual impressions. Volkmann estimates these to be $0^{\text{mm}}\cdot0005$;[1] and others at 0·000005 of an inch.[2] 2d. A single distinct impression made by the molecular vibration of the Ether—the excitor of the sense of sight.

The above conditions are obtained, *a*, by the special anatomical arrangement of the retina: *b*, by the refracting apparatus of the globe of the eye that concentrates the undulatory rays of the Ether proceeding from every point of a visual object on the distinct sensitive points or spaces of the retina: *c*, by the suppression of the undulatory vibrations immediately they have excited an impression in the retina, by the black pigment of the choroid coat. Their reflection from the exterior surface of the sclerotic coat, and reiterated excitement of the retinal surface, is in this way prevented. In Albinos, the pigment of the choroid is either deficient or absent, and the consequence is indistinct vision in daylight, from the general excitement of the retina by the reflected undulations of the Ether occupying the globe of the eye.

Similar conditions are obtained in hearing: 1st. By the auditive nerve being decompossd into its separate filaments and ganglionic vesicles, amounting to some thousands, and spread out in a manner to receive single, individual impressions, in the membranous vestibule, ampullæ, and on the lamina spiralis of the cochlea. 2d. By the molecular undulations or vibrations excited in the fluids—peri- and endo-lymph—by the sonorous undulations communicated by the stapes, occupying the fenestra ovalis. From this point they radiate in expanding waves of undulations, strike on and pass through the membranous vestibule and ampullæ, on which the filaments of the vestibular branch of the auditive nerve are arranged, producing a single, distinct impression, reinforced by the resonance of the superimposed otoconiæ, acting like the sounding-board of the piano, and exciting a single and distinct impulse, and perception of sound. The sonorous vibration having thus completed its office, the specific excitation of the sense of hearing must, like that of the visual vibration, cease or be suppressed. This occurs in part in the ampullæ, but mostly in the semicircular canals.

The vibrations of the endolymph reaching the ampullæ are partially broken and weakened at their openings; those entering the ampullæ again expand, losing thereby their impetus, and either die away against the membranous walls, or come in conflict with the vibrations of the perilymph on their exterior. The two can scarcely be in perfect consonance of expansion or condensation, and interference ensues by which they are suppressed. In this mode all the feebler vibrations are terminated. Those of greater force enter simultaneously the two opposite openings of the semicicular canals. The orifices and the commencement of each canal differ as to size and form, and consequently each entering wave of undulatory vibrations is modified, thus losing their consonance of expansion, and when they meet interference and suppression result Reflexion of sonorous vibrations is completely provided against.

Parallel conditions exist in the cochlea. Its two canals—the superior scal vestibuli, and the inferior scala tympani—are filled with lymph-fluid continuou and identical with that of the vestibule. The first, the scala vestibuli, according to the latest investigations of Kölliker,[3] is the principal seat of hearing On its lamina spiralis is expanded a sentient, nervous structure, the recipien of the sonorous vibrations excitative of the sense of hearing. It is the homotype of the retina of the eye. The scala tympani furnishes space for spreadin out the filaments of the nerve, but the terminal extremities pass through the membranous spiral lamina, to be incorporated with the sentient organ of hearing in the superior canal or scala vestibuli. The filaments of the inferior canal or scala tympani are mere conductors of the nervous excitement of the auditive sentient membrane. The scala tympani, similar to the semicircular canals, has no direct connection with the production of hearing. It is the homotype of the semicircular canals, and performs the same office.

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[1] "Annual Report of the Progress of Chemistry and Allied Sciences," by Liebi and Kopp, vol. iii. p. 98.

[2] "Lardner's Handbook of Optics," p. 155.

[3] "Human Miscroscopical Anatomy." Da Costa's translation. Note, p. 175.

The sonorous vibrations, starting from the stapes and fenestra ovalis, rushing into the adjacent opening of the scala vestibuli, excite, by their impulse, the auditory membrane or retina, spread over its lamina spiralis, and reach its termination where it opens into the scala tympani. Feeble vibrations may subside spontaneously by exhaustion from their extension. The stronger pass on into the scala tympani, where they fade away, or are suppressed by the interference of vibrations entering the inferior canal by the fenestra rotunda from the tympanum. The condition for perfect hearing, for the distinct perception and appreciation of the finest tones and notes, so that each vibration shall make but one, single, distinct impression, and then be suppressed, is thus amply fulfilled.

Analogous provisions are perceived to exist in the tympanum, to preserve in that cavity perfect wave-systems of undulations, indispensable to the perfection of the sense of hearing. Vibrations existing in air contained in a cavity with plane walls, would continue to be reflected from side to side, producing confused sounds or noise. The air in the tympanum is thrown into vibrations by impulses of the membrana tympani. They are communicated pure and in perfect accord to the membrane of the fenestra rotunda. This curious and beautiful result is effected in the following manner: on one side the tympanum communicates by numerous openings with the mastoid cells communicating with one another. All the vibrations impinging on this side are suppressed in the mastoid cells. Those that reach the opposite side are swallowed up and lost in the Eustachian tube. All resonance and reflexion of vibrations are suppressed, and the wave-systems of sonorous vibrations traverse the tympanum undisturbed, enter with augmented force the lymph-fluid of the scala tympani, and meet the corresponding undulations coming from the scala vestibuli, from which both systems are suppressed by interference.

In the "Annual Report" by Justus Liebig and H. Kopp, vol. iii. p. 53, is the following observation: "It is certain that the ear is capable of receiving and distinguishing many notes, the vibrations of which reach it simultaneously. As the atmospheric particles which convey the various wave systems to the ear can never receive from them more than one resulting motion, it follows necessarily that the ear possesses the power of distinguishing, in this resulting motion, the periods of the component wave-trains. For the present, we are, however, unable to explain upon what this power depends."

The preceding theory furnishes an explanation of the above problem, considered as inexplicable by Liebig and Kopp, in 1852. It demonstrates the manner in which the wave-systems of sonorous vibrations pass through the fluid of the labyrinth undisturbed, preserving their relations to each other and their special qualities of sound. Each separate vibration of the molecules of the lymph-fluid are shown to produce a special, distinct impression on the nerve structure, and excite a corresponding perception of sound.

The small space through which the vibrations pass, and the rapidity of their movements in fluids, cause the impressions they make on the nervous sentient organ, and the perceptions they excite, to appear as an instantaneous act. The mind has cognizance of them, however diversified they may be, as a unity of sounds simultaneously instant in action: whence it forms the compound idea of a perfect harmony.

An analogous phenomenon occurs in vision. When a body composed of different forms and colours is presented to the eye, as a bouquet of flowers, a landscape, or picture, each different form, colour, tint, and shading, are perceived blended, but perfect and distinct, forming the image of a single object. Yet thousands of Ether vibrations are traversing the eye, and are exciting each a separate, distinct impression, without confusion, on the retina, and as many distinct and separate perceptions, from which a corresponding compound idea of a single object is formed by the mind.

Three Cases of Dislocation of the Femur reduced by Manipulation.—Dr. E. J. Fountain, of Davenport, Iowa, records (*New York Journ. Med.*, Jan. 1856), three cases of dislocation of the femur, one of which was upon the dorsum ilii, and two on the pubes, reduced by manipulation, and describes a new method of reducing the latter form of dislocation.

"Case 1. *Dislocation upon the Dorsum Ilii.*—*Oct.* 7, I was called in the night to go in haste to the relief of a lady, Mrs. S—, who had received, as stated, some serious injury of the hip, or thigh, by being thrown from a wagon. I was accompanied by my partner, Dr. Adler. We found the patient in bed, complaining of pain in the left hip. The examination revealed at once the nature of the injury, which was a dislocation of the left femur upon the dorsum ilii. On placing the patient erect, the characteristic appearance was presented. The knee resting upon the lower third of the thigh, the great toe of the foot upon the instep of the opposite limb, and the trochanter major approximated to the crest of the ilium. The diagnosis was confirmed by an attempt to rotate and abduct the limb. A mattress was thrown upon the floor, and upon this the patient was placed upon her back. A towel was carried around the sound thigh and hip, and held down by Dr. Adler; but this assistance I found to be quite unnecessary. I then grasped the knee with my right hand, and the foot with my left; flexed the leg on the thigh, and carried the knee and thigh over and upon the sound one, and then upwards as high as the umbilicus, keeping it constantly pressed down upon the body. I then carried the knee outward, bringing the heel inward and the foot over the opposite limb, at the same time making gentle oscillations of the thigh, when the head of the bone slipped suddenly into its socket. The force required was quite moderate, and the pain almost nothing. The *time* occupied by the manipulation, from the instant I took hold of the knee and foot, until the operation was completed, did not exceed *ten seconds.* The manipulations were made by one continuous uninterrupted motion. The knee was caused to make a 'semicircular sweep' over the sound limb and across the body, then a few quick oscillations, and it dropped down into its natural position. I held the thigh up firmly and steadily, while making the oscillations; and in this position, at right angles with the axis of the body, and abducted, and the foot over the opposite thigh, the head of the bone entered its socket.

"Case 2. *Dislocation of the Pubes.*—In June, 1854, I was called to see a man who had fallen from the second story of a house to the ground, upon some pieces of timber. His lower jaw was fractured, and his left hip dislocated. The limb was a trifle shortened, and the foot strongly everted. The prominence of the trochanter major was lessened, and the head of the bone could be felt upon the pubes. While waiting for the appearance of Dr. Arnold, who had also been sent for, I was reflecting upon the necessary arrangements to be made for the application of the *pulleys.* While thus meditating upon the subject, I began to think of the possibility of reducing the dislocation by manipulation. Considering the position of the head of the bone and its relation to adjacent parts, it occurred to me that by rotating the limb still more strongly outward, I might elevate the head of the bone from its resting place—the trochanter major acting as a fulcrum. Then, by carrying the leg and foot, and after it the knee and thigh, over the opposite thigh, while the limb was still strongly rotated outwards, the head of the bone would be made to move upwards and outwards in the arc of a circle of which the trochanter major would be the centre, and the neck the radius. After being thus brought over and upon the edge of the acetabulum, a motion of the limb directly upwards, would, in the same way, throw the head of the bone into its socket—the muscles attached to the trochanter major holding that point comparatively fixed.

"Before the arrival of Dr. Arnold, I had determined to test the theory; and on explaining my views to him, he at once expressed his willingness to have the attempt made as I suggested. At worst, it could only fail without much, if any harm, and then we had the pulleys ready for application after the 'classical method.'

"The patient was placed upon the floor on a quilt. Being a man of strong muscular development, I thought there would be more certainty of success if relaxation was first produced by the inhalation of chloroform. He readily came under its influence. When quite unconscious, the limb was taken by the foot and knee and rotated outwards, the leg flexed and carried over the opposite knee and thigh, the heel kept well up, and the knee pressed down. This motion was continued by carrying the thigh over the sound one as high as the upper part of the middle third, the foot kept firmly elevated. Then the limb was carried directly upwards by elevating the knee, while the foot was held firm and steady, at the same time making gentle oscillations by the knee, when the head of the bone suddenly dropped into its socket. Time required in the operation, from twenty to thirty seconds. The force used was slight; I believe it could have been reduced about as well without the chloroform.

"Case 3. *Oct.* 31, 1855.—John McCarthy, an Irishman, had his hip dislocated by falling with a horse he was riding. The horse slipped and fell, rolling over upon him. I found the limb about the same in length as the sound one; but greatly everted, the toes pointing directly outward. On attempting to rotate and flex the limb, pain was produced, and a comparative immobility manifested by resistance. The head of the bone was felt forward upon the pubes. As soon as I discovered it was a dislocation, my first thought was to send for Dr. Adler to witness the operation. But the temptation to take hold and reduce it immediately, was too strong. The patient was resting upon a low couch. I immediately took hold of his knee and foot, rotated outwards and flexed the leg by carrying the foot over the sound thigh, keeping the heel well up, and pressing the knee down. After I had brought the thigh in this way over the upper part of the sound one, I carried it directly upwards, holding the foot firmly up and making oscillations by the knee, when the head of the bone slipped into its socket, and the limb at once assumed its natural appearance and mobility. A little more force was required in this than in the other case; but it was still quite moderate, and the pain very slight. In this case I had no assistance whatever. Time occupied in operating, about twenty seconds."

The following are Dr. Fountain's directions for operating for dislocations on the pubes:—

"Taking the knee in one hand, and the foot in the other, rotate the whole limb outwards, and flex the leg on the thigh by carrying the foot over the opposite knee. Then carry the limb, foot forwards, over the opposite thigh, at the same time twisting the heel upwards, and pressing the knee down. Carry the thigh in this way over the sound one as high as the upper part of its middle third, then elevate the limb by raising the knee while the foot is held firm, at the same time making gentle oscillations, when the head of the bone will slip suddenly into its socket."

Amputation at the Knee-Joint.—Dr. Thomas M. Markoe, in an interesting paper (*New York Journ. Med.*, Jan. 1856), advocates amputation at the knee-joint in preference to amputation through the thigh.

The following is a summary of the points advanced in his paper:—

1. That the amputation at the knee-joint has been regarded with disfavour, and rejected by the mass of the profession.

2. The results of experience seem to warrant and demand a reconsideration of this unfavourable verdict.

3. It is found, that the stump left after this operation, is much more useful than that left after amputation of the thigh, it being capable of bearing well, and easily, the weight of the body on an artificial limb—a consideration involving great comfort to the rich man who wears an artificial limb; and on the poor man, who must otherwise walk with a crutch, conferring the power of walking on an ordinary peg leg, thereby enabling him to earn his livelihood.

4. This amputation is probably attended with less constitutional shock, inas-

much as it is performed further from the trunk than amputation through the thigh.

5. The wound made in section of the knee-joint is really less extensive than in amputation higher up.

6. No muscular interspaces are exposed by the knife, and, therefore, there is less danger of inflammation spreading up the thigh.

7. Fewer ligatures, and those more favourably situated, are used in this operation.

8. The muscles moving the stump are not severed, and the patient is able, therefore, to move the stump with extraordinary facility, and is but little liable to painful muscular twitchings.

9. No retraction of muscles can exist, by which the coverings are drawn back from the end of the bone, producing conical stump.

10. The bone is unwounded in this amputation, and thus the numerous and serious dangers, which arise from sawing the bone, and exposing its medullary cavity to air and pus, cannot exist.

11. The dangers apprehended from opening so large an articulation, have been very greatly exaggerated, and are, in practice, found to be of rare occurrence.

12. Statistics show that the mortality, after this operation, compares favourably with amputation of the thigh, being 37 per cent. of deaths in the former, against 43½ per cent. in the latter.

13. The best mode of operation, when we have a choice, is by the long anterior, and short posterior, flap.

14. The verdict of some of the first French and English surgeons is decidedly in favour of the knee-joint operation.

Diagnosis of Dislocations of the Shoulder-Joint.—Dr. L. A. Dugas, in an interesting paper on this subject (*Southern Medical and Surgical Journal*, March, 1856), after pointing out the difficulties sometimes encountered in diagnosing dislocations of the shoulder-joint, points out the following as constituting, he thinks, an unequivocal, pathognomonic sign:—

"If the fingers of the injured limb can be placed (by the patient or the surgeon) upon the sound shoulder while the elbow touches the thorax, there can be no dislocation; and if this *cannot* be done, there *must* be a dislocation."

Some of the Local and Remote Effects of Chloroform.—Dr. C. Happoldt, the able editor of the *Charleston Medical Journal*, in his number for January last, calls attention, in some very interesting remarks, to some of the local effects of chloroform on the nerves of special sense—whose seat of function is located in the passages through which the vapour passes on its way to the lungs—and to its remote effects produced on the organs supplied by the nerves which proceed from the lower segment of the spinal column. The following cases recently came under his observation, which are interesting for the exhibition of these phenomena:—

"The subjects of both were of the nervo-lymphatic temperament, and of sedentary habits. They had, during several months, resorted to the inhalation of chloroform for the purpose of procuring sleep, when this desired condition did not naturally occur at a seasonable hour. One or two ounces generally induced tranquil slumber, without being followed by any unpleasant consequence, except slight nausea, which usually disappeared after the morning meal.

"One of these patients had an attack of asthma, to which he had been previously subject, and being aware of the antispasmodic and anæsthetic properties of chloroform, he unadvisedly put himself under its influence, and continued the inhalations for forty hours, during which time he inhaled *twenty ounces of the fluid.* The asthma was relieved, and has not since returned—nine months having now elapsed—but he was left in an uncomfortable condition: the sense of smell was abolished, and that of taste perverted. The bladder and rectum lost their tonicity and excitability. When the former became distended, a concentrated effort of the will was necessary to effect urination. The latter remained for several months in a torpid condition, requiring the constant use of cathartics to effect the evacuation of its contents. The sexual appetite was, for many weeks, abolished, and the restoration of the functions of these organs was slowly accomplished. Saline substances were urgently craved, and freely taken. Brandy was not disagreeable, and appeared to be of use in restoring the healthy conditions of the organs involved.

"The other patient supposes that he inhaled four fluidounces without interruption, from the fact that the phial which had contained that quantity was empty on the following morning. He remained unconscious ten hours, and on awakening experienced no unpleasant symptoms. While breakfasting, he noticed the strange taste of the various dishes of which he partook; but the taste of coffee was peculiarly unpleasant; and it was with difficulty that he could be persuaded that it was not the substances which he ate, but his sense of taste, which was at fault. During the day, whatever he ate appearing perverted in flavour, he became convinced that the cause of his altered sensations lay in his organ of taste. For more than a month neither fruits, wines, tea, nor coffee could be taken with relish, and it was not until the expiration of two months that the sense of taste was restored.

"The sense of smell was, for nearly the same length of time, almost abolished. The nostrils were nearly closed by the swelling of the mucous membrane. The tongue became pale in colour; and the mucous membrane of the mouth and throat was flaccid and swollen, as was that of the nares.

"Coincident with these phenomena, the penis was felt to be unusually flaccid; and there was no inclination to urinate. It was only after the bladder became considerably distended that urination was possible. There was no pain, but a strange sensation along the urethra while the urine was passing out. The specific gravity of this excretion was somewhat below the normal standard, and it contained a large proportion of the triple phosphates, and a trace of the crystals of uric acid. During two months there was no erection of the penis. The patient believed that the secretion of semen was not interfered with, from the sensation referred to the testes, and the desire which existed for sexual indulgence. The inability to perform the act he attributed solely to the paralysis of the perineal muscles.

"The rectum and intestines partook of a similar torpidity with the urinary organs; but the sphincter ani retained its contractile power. For a week there was no evacuation from the bowels, and no uneasiness was felt therefrom. The saline cathartics had very little effect. Calomel, rhubarb, aloes, and other more drastic substances, were found most efficacious. Nux vomica and strychnine, arnica, and iron were resorted to, with no perceptible effect over the paralyzed organs. Brandy, which was most agreeable to the taste as a beverage, appeared to mitigate the symptoms, and was freely taken during their continuance.

"After the expiration of two months, the only remaining effect of the chloroform was constipation, which remains until this time (December 20), five months since the last inhalation. This patient had never before suffered from constipation: now defecation seldom occurs without the aid of a cathartic.

"Opium and its preparations have been known to produce impairment of the functions of the genital organs and bladder, as well as of the rectum and bowels; but its effects have not been so marked, or of so long duration after the discontinuance of its exhibition, as the effects which resulted from chloroform in these two cases. As some idiosyncrasies are more easily and differently impressed by this and other medical agents, chloroform may not produce the effects I have recorded on all persons who may habitually use it in such large quantities.

"The statement of the facts observed in these two cases are submitted for perusal, in order that other observers, who may not have noticed similar effects, may be prepared to counteract them should they occur; and also to warn those who may resort to this agent, for the purpose of allaying irritative pain, or for producing sleep, of the dangerous consequences which may ensue from its use."

Vapour of Bisulphuret of Carbon as a Remedial Agent.—Dr. Calvin G. Page has made some experiments, for the purpose of testing the remedial virtues of this article. He has used the vapour only, and with varying success, in about twenty cases. He relates (*Boston Med. and Surg. Journ.*, 28th Feb. 1856) the four following:—

Case I. *Nov.* 7, 1855.—Catherine Gamon, aged 45 years. On the passage from New York to Boston, two days previous, was exposed to a draught of air, which produced a neuralgic pain in the right side of her face and head, but most severe along the lower jaw and below the eye.

A wide-mouthed bottle, containing half a drachm of the bisulphuret of carbon, was placed on the cheek, beneath the eye, and then at the angle of the jaw. As soon as the specific effect of the application was produced, there was an immediate cessation of pain. She left my office feeling entirely well, but came back again the next day, saying that she had no pain for four hours after I made the application, when the pain returned, but not as bad as before. I again applied the vapour, with immediate relief. I saw the patient a month afterwards, and she had experienced no return of her trouble.

Case II. Patrick Coffee, of Fruit Street, had strained his left hip while lifting heavy stones. There was a tender, puffy spot, about the size of a dollar, behind and above the trochanter. He had considerable pain on moving the limb, so much as to keep him in bed all the morning. The pain and tenderness, although deep-seated, were removed at once by the application of the vapour to the tender spot. He had no return of pain, and went to work again at once.

Case III. John Scammel, well known to the profession, got temporary relief from his rheumatic pains, on two successive days. One day, he was free from pain for three hours. The vapour was, in this case, applied to one spot on the trochanter, and to two places along the fibula.

Case IV. J. A. had been under treatment for three weeks, for a rheumatic affection of the heart and joints. Blisters, wine of colchicum, and other treatment, had been used, without any marked benefit. He had still severe paroxysms of pain in the region of the heart. A bottle, containing half a drachm of bisulphuret of carbon, was left with him, with directions to apply it over the heart whenever the pain came on. This was done, with a decided diminution, both in amount of pain and length of duration of each paroxysm.

In three other cases, it proved an entire failure. One of these was a case of facial neuralgia, on which neither this nor any other remedy produced an impression. Several patients were relieved from local pain for a short time; but there are no features of special interest in the cases.

The particular sensations produced by this vapour are, first, a sensation of coldness, then a feeling of warmth with prickling, which rapidly increases, until it can no longer be borne.

From my experience with this agent, I am inclined to conclude: First, that it is a valuable means for the temporary alleviation of pain; second, that in some cases of painful affections, where the pain is local, it is of permanent benefit.

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Sulphate of Cinchonia in Intermittent Fever.—Dr. J. C. Welles gives (*Cincinnati Med. Observer*, Jan. 1856) a summary of 57 cases of intermittent fever, treated at the city (Cincinnati) dispensary by the sulphate of cinchonia, manufactured by Powers and Weightman, of Philadelphia.

Of these, 37 were quotidian, 18 tertian, 1 quartan, and 1 double quotidian. "In a number of instances, the disease was of quite recent origin; but in a majority of the cases it was of an inveterate character, contracted, many months previously, in the miasmatic districts of Indiana and Ohio—and the patients residing for the most part, during their treatment, in the most unhealthy sections of our suburbs. Anæmia and enlargement of the spleen were very frequent complications. In several of the cases, quinia had been previously used without effect.

"From fifteen to twenty grains of the sulphate of cinchonia were generally administered during the intermission; but this quantity, in some cases, had to be repeated a second and even a third time, before the disease was completely arrested. In some cases, this amount was administered once, and without any subsequent treatment the disease was observed to subside, after the second or third paroxysm following. It was generally given in solution with a few drops of sulphuric acid, and in this form it seemed to act more promptly than when given in powder.

"It was not observed to produce nausea and vomiting, when given in large doses, except in one or two cases, where there was evident gastric derangement. In one case, fifteen grains were administered at once, with the effect of only producing slight nausea, some fulness of the head, and acceleration of the pulse.

"In fifty-three out of the fifty-seven cases, the result was entirely successful, the disease seldom extending beyond three days after the treatment was instituted. In the other four cases, the remedy was abandoned, and sulphate of quinia substituted with success. These cases cannot, however, be regarded as evidences of any great value, of the comparative merits of the two remedies, for it is highly probable that the previous use of the one rendered the system more susceptible to the influences of the other; and besides, in two of the cases, complications existed during the administration of the cinchonia, which doubtless seriously interfered with its action, and which measurably removed before quinia was used. In the other two cases, one of which was a quartan, the other a quotidian, there was considerable anæmia and enlargement of the spleen, but the disease was promptly checked with quinia after a second failure with cinchonia in the same doses.

"As far as could be ascertained, the tendency to relapse, after the use of the two remedies, seemed to be about the same; but upon this point no accurate observations could be made, as the patients generally ceased their attendance at the dispensary as soon as cured, and in many instances left the city.

"A number of cases were treated with quinia during the same period, and a comparison of the results obtained from each would seem to indicate that, of the two salts, sulphate of cinchonia is perhaps the less powerful, but might be substituted for the other in somewhat increased doses.

"It has been used in a number of cases as a general tonic, with very decided success."

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Chinoidine (*Amorphous Quinia*) *as an Antiperiodic.*—Dr. **Frederic D. Lente** states (*New York Med. Times*, February, 1856) that during the last summer he made a somewhat extensive trial with chinoidine (to the exclusion of quinia) as an antiperiodic, and that he has found it to possess at least three advantages over the latter. First, and principally, on the score of economy, it being sold at fifty cents per ounce, a no mean advantage among the poorer classes. Secondly, because it produces none of the disagreeable head symptoms termed quininism, which symptoms I have found to deter some patients, especially among the higher classes, from using quinia; a matter of some importance in these days of Homœopathic delusion. Thirdly, because, being far less disagreeable to the taste than quinia, it can be administered with very little trouble to children.

It was administered to adults uniformly in the following manner: a pill composed of chinoidine three grains, dried sulphate of iron and capsicum, of each one grain, was directed to be taken every four hours until the period of the expected paroxysm had passed by. If the paroxysm did not recur, one pill was given three times a day for one or two days, to prevent relapse; and if the disease had been at all protracted, the pills were continued for two or three days longer. For children, the chinoidine was mixed with sweetened mucilage, and a teaspoonful, containing from three-quarters of a grain to a grain and a half, according to age, given every four hours: the *minimum* dose being well borne by the youngest infant, and the *maximum* sufficing for a child five or six years of age. As the chinoidine is rather troublesome to form into a fluid mixture, it was found convenient, by the apothecary, to have an alcoholic solution ready at all times, containing half a drachm of the remedy to a drachm of alcohol, which is about the limit of its solubility. This solution will not mix with water or with watery mixtures, being immediately precipitated, but will readily mingle with thick mucilage.

Poisoning by Strychnia successfully treated by Camphor.—Professor ROCHESTER reports (*Buffalo Med. Journ.*, March, 1856) the following case of this:—

Feb. 2, 1856. I. De F., aged 32 years, was admitted about 5 P. M. He had taken strychnia with a view of self-destruction. It was swallowed at 4 P. M., and was said by him to have been four grains in amount. Supposing a fatal effect certain and speedy, he mentioned to an acquaintance what he had done. Large draughts of whiskey were poured down him immediately, and he was hurried to the hospital. In the absence of the house physician, Dr. B. H. Lemon, a messenger was despatched for Dr. Rochester, who arrived at 7 P. M., and reports as follows:—

The patient, a robust and athletic man, was much excited; his eye was bright and wild; his countenance flushed, and his respiration hurried; he complained of great thirst, and of a burning sensation at the epigastrium. The pulse was slightly accelerated, but not increased in force. He had been vomiting very freely; the emesis being produced by copious draughts of warm milk administered by the Sisters of Charity. The iris responded readily to the tests of sensibility. I was informed that he had had several tetanic convulsions, the last of which had just taken place, and was unusually long and severe. I directed a large sinapism to be applied to the epigastrium, and gave him 2 grs. of powdered camphor with half a teaspoonful of the tr. of camphor suspended in water. The sinapism had hardly been applied and the camphor taken, when a spasm commenced, first manifesting itself in the cervical muscles, then in those of the arms and chest, the latter producing slight opisthotonos, and lastly in those of the face, turning the eyes into their orbits, and setting the lower jaw firmly. The countenance became turgid, and the jugulars were enormously distended. The pulse numbered 88 per minute, and preserved its rhythm. Respiration seemed to be entirely suspended, no respiratory murmur was detected, but the heart's sounds were quite audible. The strong contraction of the pectoral muscles produced so much noise that the pulmonary auscultation was incomplete. The nares were distended, and remained so. The paroxysm lasted about three minutes, and then ceased with sudden muscular relaxation, and with a deep inspiration. The Sister of Charity in attendance told me that the preceding convulsion had been longer, and that it was cut short by the application to the nares of the vapour of strong aqua ammonia. The spasm over, the patient complained of slight headache and of intense thirst; his respiration was again hurried, and his wild manner returned. His aspect and condition were not unlike those of Myer, the hydrophobic patient whom I saw with Dr. Hawley, and other medical gentlemen, some two years ago.

I directed the sinapisms to be removed from the epigastrium, and placed over the cervical and dorsal vertebræ, and repeated the camphor as before, with the addition of half a grain of morphine. At 7.35, a spasm similar to the one described occurred; confident in the antidote properties of the camphor, I directed it to be given every fifteen minutes, and left the patient in charge of Dr. J. D. Freeman, who kindly consented to remain with him until the arrival of Dr. Lemon. The latter returned to the hospital about 9 P. M., and reports: Respiration 55 per minute; pulse 80. A spasm at 9 o'clock and 10 minutes, duration two minutes. There was opisthotonos, with intense contraction of masseter, sterno-mastoid, pectoral, biceps, and gastrocnemii muscles. Spasms occurred at 9.25, 9.45, 10.15, and at 10.25. This proved to be the last, and was like a severe chill; the one at 10.15 lasted five minutes, and was very severe. At 11.30 there had been no recurrence of either spasm or chill. I directed a little chicken broth and weak brandy and water, and left him, with directions to be called if there should be any untoward symptoms. His respiration at this time had fallen to 40; pulse 88. He vomited several times on taking the camphor; but the dose was immediately repeated, and was not rejected on its second administration. To relieve the thirst and allay the vomiting, small pieces of ice were given.

Feb. 3. Is much better this morning; has slept some; says he is hungry; is not thirsty, and has little or no pain at the epigastrium. Pulse 86; respiration 20; pupils natural; no headache.

Directed light diet, and to remain in bed. The camphor, of which he took in all about ʒj, produced neither cerebral nor gastric derangement.

4th. Patient entirely recovered.

Dr. Rochester remarked that this was the second case reported by him to the Society this year, where camphor had been successfully employed to counteract the effects of strychnia; he thought there was no doubt as to its properties as an antidote. Might it not possibly be successfully used in cases of traumatic and idiopathic tetanus?

Abortion; Spontaneous Inversion of the Uterus.—Dr. John A. Brady reports (*New York Medical Times*, February, 1856) a case of this. The subject of it was an unmarried woman, aged 23, who had had a child two years before, and five months advanced in her second pregnancy. When seen by Dr. B., the patient had powerful labour pains, the os was fully dilated, the membranes protruding, and the head presenting. She stated that three days previously, while walking with a friend, she made a mis-step, it being very dark, falling on her abdomen and bruising it severely; and that about twenty-four hours before Dr. B.'s visit, she was severely kicked on the abdomen by her brother, who was enraged at finding her in a pregnant condition: she had been in pain ever since the receipt of the last blow, but did not think she was in labour until about five hours before Dr. B. visited her. The pains continued in frequency and force until 4½ A. M., when the membranes ruptured, and at 6 A. M., after a very severe pain, she was delivered of a five months female fœtus, which lived but a moment. The cord was of the usual length, and not wound around the neck of the child. Just after the cord was severed, and while Dr. B. was removing the child from the bed, she was seized with alarming and frightful hemorrhage. The bed and its clothing were saturated, and even the floor under the bed covered by the vital fluid; the case appeared to be hopeless: the pulse was not perceptible at the wrist, the face was blanched and death-like, the features pinched, the breathing laborious, the body cold and bathed in perspiration, and the woman apparently dying. The uterus was found lying between the thighs, inverted, with the placenta attached to its fundus; it was flaccid, and not in a contracted condition. Dr. B. immediately restored it to the vagina, and by forming his fingers into a cone and pressing them against the fundus, succeeded with very little difficulty in restoring the organ, with the placenta still attached, to its proper position. Dr. B. kept his hand in the uterus until the patient had rallied somewhat, and contraction of the organ had taken place. Before removing it, he tried with his fingers to peel off the placenta, but being firmly adherent, he only succeeded in getting away about one-half of the central portion of it; and being fearful of causing a return of the flooding if much force was used—knowing that a further loss of blood, however slight, would cause his patient to sink and die, he desisted from the attempt, and allowed it to remain. During all this time, brandy, and subsequently carb. ammon. were used freely, together with the external application of dry heat and the use of friction. A bandage was also carefully applied to the abdomen, and the woman kept perfectly still and quiet on her back, with the hips elevated. The hemorrhage at this stage was trifling; reaction came on gradually, and at noon her cheeks were hot; pulse 140, full and sharp, and there was some delirium present. The uterus was firmly contracted on the placenta, which thus far had resisted every attempt made for its removal. At 3 P. M., the patient being placed under the influence of chloroform, Dr. B. satisfied himself by a careful examination of the impossibility of removing the placenta without resorting to greater violence than would have been justifiable, he determined to let it remain where it was, and wait for its removal—in the meanwhile feeding her on brandy and beef tea, and using frequent vaginal injections of cold water.

Sept. 19, *Afternoon.* Patient began to have considerable pain in back and abdomen, accompanied by a florid discharge of blood from the uterus. Administered ʒj of tinct. ergot. sat.; and after oiling his hand well and passing it up the vagina, Dr. B. succeeded, with a great deal of difficulty, in bringing away the remainder of the placenta; it was in a putrid condition, and emitted a horrible odour. The hemorrhage was slight, and caused no marked prostration; an injection of cold water was then carefully thrown up the vagina, the bandage adjusted, and the patient kept quiet in the recumbent posture. From this time she slowly recovered.

Abortion following the Administration of Chloroform.—Dr. L. G. Robinson relates (*Peninsular Journal of Medicine*, Dec. 1855), the following example of this:—

"A few days since, I was summoned to the bedside of Mrs. N——, an English lady, aged about 35, whose history is briefly as follows: About four years since she came to this country, and soon after her arrival, became a resident of this city. She had been married six years, was the mother of two children, and had uniformly enjoyed excellent health. In appearance, she possesses a robust, vigorous constitution, of plethoric habit, and florid complexion—true to the English model. Nearly two months after her arrival in this city, she aborted in the 3d month of pregnancy, the cause of which was attributed to a fall, and mechanical injury. She recovered promptly, however, and about two years since, gave birth to a fine boy, at the end of a full period of gestation. Her labour was natural and easy, and her convalescence not protracted. Since that time she has enjoyed uninterrupted good health, up to the event of her present miscarriage.

"On the morning of the day in which this occurred, she engaged in the duties of her household affairs, as well as usual, with the single exception of a slight toothache. Her sister, living in the adjoining house, had, for some time past, been in the habit of using chloroform by inhalation, quite freely, to relieve a facial neuralgia; and happening into the house of Mrs. N——, found her suffering, as she believed from a similar cause, whereupon, she immediately procured her bottle, and dropping a quantity upon her handkerchief, urged her to 'snuff freely until she would begin to feel happy.' Leaning back in her rocking-chair, she gratified her sister by full inspirations until the toothache was forgotten, and even sensibility to *severe pinches*, so much obtunded as to afford great merriment for the sympathizing and provident sister. She remained in this condition nearly a half hour, and it was even then most difficult to arouse her to a semiconscious state, in which she expressed a desire to lie down on her bed. When asked if she was comfortable, and free from pain, she answered in the affirmative. In this happy dream she rested till about four o'clock P. M., when full consciousness returned, and on attempting to rise from her bed, vomited freely, and then was seized with pains of labour, more severe, tenfold, than she had ever suffered before. This had continued a little more than an hour when I arrived. She at once informed me that she was in labour (a fact clearly inferred from her expulsive efforts, and intense suffering), and as she expressed it, 'much before time,' being in the fifth month of gestation.

"Upon examination, I found uterine effort extremely severe, and continuous, while the fœtus was just passing from a well relaxed os uteri, and was removed without delay, exhibiting no signs of viability. The after-pains continued severely intense in spite of anodynes for about six hours, accompanied with considerable hemorrhage and febrile excitement. But towards morning of the following day, she awoke from a refreshing sleep of two hours' length, quite free from pain; and from that time has continued to convalesce without any untoward symptoms worthy of note."

Interstitial Pregnancy.—Dr. C. H. Stedman reported, September 24, 1855, to the Boston Society for Medical Improvement, the following case of this rare form of extra-uterine fœtation:—

"S. A. H., a light mulatto girl, aged 20, unmarried, chambermaid, of healthy and strong constitution, at 6 o'clock A. M. of September 15, complained of pain in the umbilical region. Her mother gave her a mixture of camphor and laudanum. Being somewhat relieved, she left her home, and went to her place of service. Her pain increased, and at 9 o'clock she fainted. She then had a desire to defecate, but could not accomplish anything. An apothecary who was called in directed a pediluvium; this, with friction of the abdomen, seemed to relieve her for a time. On taking some brandy and water she vomited. She was taken in a coach to her mother's house at 4½ o'clock P. M., and continued to be very faint and in great distress. Dr. F. H. Gray, who was called in, found her extremities cold, and her pulse feeble and rapid. The mother says that 'her breath was cold,' her lips were exsanguine, and her cheeks had lost their usual redness. Her consciousness remained till near her death, which occurred at 5½ o'clock the same day.

"From her mother it was ascertained that her menstruation had for several months been irregular—that 'she had seen nothing' for two months past, and that this was not an unusual occurrence with her.

"The appearances observed at a *post-mortem* examination of the body, conducted by Dr. F. S. Ainsworth, were as follows:—

"*Sept.* 16, 1855—11 o'clock, A. M.

"*Externally.*—The form was well developed, the mammary glands were unusually large, the nipple prominent, the areola not remarkably dark; the skin over the front and outer portion of both thighs was slightly scarred, as if from former pregnancy. The lips and face were exceedingly pale and exsanguine.

"*Internally.*—The *brain* was very pale and empty of blood; otherwise it was healthy. The *lungs* presented the same appearances. The left lung was attached to the pleura costalis by old adhesions. The *heart* was healthy. On opening the *abdomen* a large coagulum was found lying over that part of the intestinal tube contained in the pelvis, bounded above by a line drawn between the iliac crests and filling up the cavity of the pelvis. Three quarts of fluid blood were drawn off from the cavity of the abdomen. On examination of the coagulum, fibrous and shreddy filaments were found extending throughout its whole substance; and on raising it up from the uterus, the mass tore away from the left side of the fundus of the uterus just beyond the entrance of the Fallopian tube; at which point there was a rupture of the substance of the uterus about one inch in length, leaving an excavation in that organ about the size of a small hen's egg, the walls of which were rough and studded with small coagula, and, upon the peritoneal surface, very thin. A probe passed into the Fallopian tube penetrated into this cavity. The uterus itself was about twice its normal size. The os was closed by a gelatinous substance. The lining membrane of the cavity was much thickened, presenting the usual appearance observed in the first months of pregnancy. The cavity of the fundus was separated from the excavation above mentioned by the thickened lining membrane of the cavity of the uterus. No opening was found between the excavation and the cavity.

"On examination of that portion of the coagulum found in the abdomen, and which was attached to the uterus, *a fœtus* was found, inclosed in its membranes, apparently about eight weeks old.

"All the other organs of the body were examined and found healthy.

"[Churchill declares '*interstitial fœtation*' to be the rarest of all the forms of *extra-uterine* pregnancy. He gives three divisions from the work of Dr. Campbell,[1] for the varieties of this accident, viz: Ovarian, tubular, and interstitial fœtation; the latter he defines to be that in which 'the ovum enters the parietes of the uterus, but is detained in an interspace of the fibres before it arrives in the uterine cavity.' 'Ovario-tubal' fœtation (Campbell) and 'ventral' fœtation are enumerated; the former being a compound of the first two varieties, and the latter that in which the abdominal cavity is found to contain the ovum. Dr. Campbell rejects cases of the latter sort, as doubtless belonging, originally, to one or other of the above-enumerated forms; a separate class being therefore unnecessary (*Op. cit.*, Eng. ed., pp. 127–8.) An interesting case is related by Dr. Churchill: 'it occurred in the practice of the late Mr. Hey, of Leeds, and by him was communicated to Dr. W. Hunter.' In further remarking upon this subject, Churchill writes as follows: 'In interstitial fœtation, the symptoms are a modification of those in the other varieties. In some, there are abdominal pains and sanguineous discharges, in others these are absent; but in all the cases on record, the tumefaction and fœtal movement were confined to one side of the abdomen. It is also remarkable, that in all, the child appears to have lived to the term of utero-gestation.' (*Loc. cit.*, p. 132.) Dr. Ramsbotham prefers to call interstitial fœtation '*parietal.*' He refers to the history of a case of extra-uterine fœtation so long since as the times of Albucasis, but adds that 'the occurrence was by no means understood till comparatively recent times, and very few years have elapsed since the parietal variety has been known to exist. (*Obstet. Med. and Surg.*) Schmitt, of Vienna, is said (*Ramsbotham*) to have given the first detailed account of this particular species. (*Memoirs of the Josephine Academy*, vol. i., Vienna, Anno 1801.) Ramsbotham met with an instance in 1820, but the specimen was not fully understood by him until 1824, when translating a French account of a case identical with his own, and which was sent by Breschet to the Medico-Chirurgical Society. (*Trans. Med. Chir. Society*, vol. xiii.) This, according to Dr. R., is the first paper descriptive of this variety of fœtation (*parietal* or *interstitial*) published in the English language.

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[1] Memoir on Extra-Uterine Pregnancy: Edinburgh, 1840. Dr. Ramsbotham says of this work, it is "a publication full of most valuable facts and deep research, and which I would strongly recommend to the perusal of those who take an interest in this subject."—*Obstetric Medicine and Surgery*, Eng. ed., p. 646.

"Authors have speculated not a little upon the *causes* of extra-uterine fœtation. It has been remarked that a large relative proportion of unmarried females have become the subjects of the complaint; this gives some foundation for the supposition that such persons are more liable to be afflicted with it than women of regular habits and character.[1] (*Astruc*, *Josephus*, and *Burdach*, referred to by *Ramsbotham.*) Surprise during *coitus* has been followed by this accident. A blow on the abdomen shortly after conception, producing inflammation, has been supposed causative of the arrest of the ovule in its transit from the ovarium. (*Montgomery.*) Ramsbotham, in his own practice, has had twelve cases of extra-uterine conception; one only was interstitial; there were but four recoveries."—SECRETARY.]

At the next meeting, Dr. Jackson said that he had examined the specimen with Dr. Jeffries Wyman, since it had been shown to the society by Dr. Stedman. A bristle was passed into the right Fallopian tube, and it seemed about to enter the cavity from which the fœtus was removed; but it could not be made to enter, after a long and careful trial; and neither did water, when injected into the tube through an Anel's syringe, appear to come out into the cavity. It was not found, then, to be a case of tubular pregnancy, though it terminated, as such cases usually do, by rupture and hemorrhage into the peritoneal cavity. Subsequently, the point of the bristle was found to have penetrated into the cavity; but this was probably the result of some slight violence done to the parts in handling them.

The left ovary was fully examined, and showed no traces of a *corpus* luteum. In, and projecting from, the right ovary, was a cyst nearly or quite as large as an English walnut; the parietes were not more than a line in thickness, and had the colour and consistence of a *corpus luteum.* The right ovary was not otherwise remarkable; and Dr. J. suggested the idea that the cyst might possibly be a *corpus luteum*, in which the central cavity not having been obliterated, the lining membrane has poured out serum so as to distend and thin the parietes. The *corpus luteum*, however, according to this suggestion, was not merely dropsical, but it was on the wrong side; it was in the right ovary, whereas the ovum was near the uterine termination of the left Fallopian tube.

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[1] In Dr. Stedman's case, the patient was unmarried; her occupation was one which usually requires much exertion; and although no direct accident or violence is mentioned, her irregular life and the furtive sexual connection practised may be remarked as somewhat corroborative of this observation. M. Cazeaux states that he has had but two cases of extra-uterine fœtation. He is not inclined to admit the influence of sudden fright during coitus as being so likely to occasion the accident as certain deviations or abnormities of the Fallopian tubes—their being affected with spasm, &c.

Dr. J. hardly felt authorized to use Dr. Wyman's name, but he has understood him to say that, in the tortoise, something like this want of correspondence has been observed between the situation of the *ova* and that of the *corpora lutea.—Boston Med. and Surg. Journ.*, Jan. 3, 1856.

Foreign Bodies retained for sixteen years in the neighborhood of the Vagina, Rectum and Bladder.—Dr. D. K. Jones, of Holmes' Hole, communicated the following case of this to the Boston Society for Medical Improvement:—

"Mrs. I. W. was married in 1838, at the age of 18 years. Her previous health, though not robust, was generally good, and so continued until Dec., 1839. In Nov., 1839, she was confined with her first child. Labor of moderate severity; recovery favourable. Four weeks after her confinement, while stepping from a chair to the foot of the bed, the chair tipped and she fell astride a small pine-wood clothes-frame, breaking it into many pieces, and severely wounding herself, although the extent of the injury was not then suspected. She fainted from the effects of this accident, and immediately had profuse hemorrhage from the vagina. Her physician was called in the morning, but made no vaginal examination; she was confined to her bed for the three following weeks on account of hemorrhage and consequent weakness, pain and soreness in the hypogastric and iliac regions, dysuria, pain in defecation, and feverishness. What appeared to be a piece of lacerated flesh presented itself through the vulva for several weeks—gradually disappearing—though again being forced through, upon the least exertion, during the entire winter.

"The hemorrhage lasted for several weeks; there was next a purulent discharge, which has continued until quite recently. A few weeks after the accident, an abscess was formed to the right of the median line, just above the pubis; the swollen surface was very painful and tender, causing much distress during micturition and defecation; after six weeks a partial discharge took place through the vagina, with relief to the symptoms. The swelling remained, and pus collected and was discharged once in from two weeks to two months, until May, 1849.

"During this period, though suffering much from local pain and soreness, purulent discharge from the vagina, pain in defecation and during coition, she was able to attend to much of her household duties, and bore three children.

"In May, 1849, being five months advanced in her fifth pregnancy, she strained herself while lifting a bed, and felt a sensation as of something breaking in her right side, in the locality of the swelling, causing severe pain, so that she fainted, with the feeling, as she expressed it, "as though all her insides were coming out of her;" there was also slight flowing. She was obliged to keep the bed from that time till the spring of 1855; a period of about six years. She was confined in the month of August, 1849, giving birth to her fifth child; none of her children are living, having died from various causes, and from two months to five years of age. There has been nothing remarkable in any of her labours, though she has suffered much after them from pain and local soreness.

"About three weeks after her last confinement she was attacked with dysentery, which was then epidemic in that vicinity, and was very seriously ill.

"She came under my care Sept. 27th, 1849, while still very feeble and suffering from the dysentery, though slowly gaining. After watching the case a few weeks, from the nature of her pains and symptoms I was convinced that there was local disease in, or about, the uterus, which aggravated the dysenteric disease. Upon examination with the speculum, the *os uteri* was found enlarged, exquisitely tender, not ulcerated, but the fossa between the posterior lip of the *os* and the *rectum* presented an inflamed, ulcerated appearance, but was so hidden by the *os* that it could not be satisfactorily explored. Under these circumstances, I made a free application of a strong solution of nitrate of silver to the *os uteri*, and as fully as could be done, to the diseased portion posterior to it. The effect was an immediate cessation of the dysenteric symptoms—more full and marked than I had dared to hope—and much relief was obtained from the uterine pains. Similar applications, and of more powerful caustics, to the more diseased portions, have been since repeatedly made, until last spring (that of 1855). From the occasional application of the stronger caustics to the diseased part, she has experienced great relief. During the six years that I have attended her, she has had abscesses form apparently in the cellular tissue between the uterus and the rectum, beyond the reach of specula or any satisfactory examination either by the vagina or rectum, and consequently not attainable by surgical interference—but burrowing in the cellular tissue and opening, at various points, into the *vagina*, the *rectum* and the *urethra*, causing urinary fistulæ. From September, 1851, to May, 1853, she was unable to pass her urine, and owing to the excessive tenderness of the *meatus*, was unable, herself, to pass the catheter; consequently, although she kept a catheter as long as possible in the bladder, at least a daily visit was necessary. The various sinuses of the vagina were laid open and healed, and likewise those communicating with the meatus and bladder. In July, 1854, an abscess broke behind the uterus, discharging *a splinter;* and from that time till August, 1855, *eighty pieces* have been dislodged and removed; most of them through the vagina at the point mentioned, a few lower down in the vagina, several through the urethra; quite a number (15 or 20) through the rectum. There is reason to fear that other fragments still remain, although from her great improvement of late, I hope but few. The pieces, as may be observed,[1] vary in size from that of an ordinary lead pencil, and one and one-fourth inches in length, to quite a small sliver.

"Since March, 1855, she has been gradually gaining, so as now to be able to be up and attend to most of her household duties.

"She is subject to profuse menorrhagia, owing, I suppose, to the long-continued irritation in the uterus and its vicinity, having established an habitual hyperæmia. These periodical attacks reduce her strength; but she expresses herself as now in better health than she has before enjoyed since 1839, when she met with the accident which caused her long and intense sufferings. She still has much distress during micturition from tenesmus, and there is tenderness of the os uteri *in coitu*.

"The peculiar nature of the accident; the length of time during which the foreign bodies remained imbedded; the bearing of several children with such disease in the immediate vicinity of the uterus, if not in its very substance; the great local changes which, during pregnancy and childbirth, must have taken place in the diseased parts, yet without exciting fatal inflammation, or effecting the discharge of the offending substances; the dysentery causing an increased inflammation in the affected region, and which thus reacted upon the rectum and aggravated the dysentery, and was finally cured by the use of caustics; the discharge of the wood, separated into so many pieces; their burrowing in the cellular tissue and escape at different points, are all circumstances of sufficient interest, in my opinion, to make it worthy of report, and I therefore send the specimens to the Society, together with the report of the case."

Effects of Lead on the Heart.—The number of the *New York Journ. Med.* for March last contains an interesting paper on this subject by John W. Corson, M. D. The following are the author's conclusions:—

1. That allowing a due excess of force to carry on the embarrassed circulation in organic affections of the heart, it appears that certain symptoms in slow poisoning from lead, as well as in cardiac disease proper, typhus fever, and apparent death from catalepsy or other causes, all tend to prove that, as a rule, the *impulse* may be termed the *pulse of the heart;* and that its more careful study than heretofore may aid us in the general diagnosis and treatment of disease.

2. That the symptoms of weakening of the heart in lead poisoning, are confined to cases of *partial paralysis, or general muscular debility*, accompanied

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[1] These were exhibited to the Society by Dr. Bowditch, and at a subsequent meeting, 38 more were shown, making in all 118.

usually by the purple streak of the gums, indigestion, constipation, pains in the head, muscles, or joints, and sometimes by lead jaundice; and that commencing and emphasizing with the most frequent, these heart symptoms from lead are—*weakened or soft tapping impulse; faintness on unusual exertion;* feeble and generally slow pulse; palpitation; cardiac uneasiness; and to these are occasionally added, great despondency or morbid fear of death; suspicions of organic disease of the heart, fainting fits, nightmare, or troubled dreams.

3. That these depressing heart symptoms are absent in the earlier and more acute stage of lead poisoning, known as *lead colic*, when, on the contrary, the stimulus of pain generally renders the impulse of the heart and the pulse at the wrist more firm than natural.

4. That skill in the detection of minute variations in the impulse of the heart, naturally requires a little careful attention and practice.

5. That these debilitating effects of lead most commonly occur in hearts previously sound, but they sometimes complicate existing organic cardiac disease from rheumatism or other causes.

6. That the agencies or causes of lead poisoning are very numerous, and often obscure; and that slighter cases supposed to be ordinary dyspepsia, constipation, debility, or bilious colic, are frequently undetected.

7. That the above tests of the immediate influence of lead on the heart in disease, are further corroborated by experiments upon animals; showing that, more mildly and slowly, *lead*, like digitalis, oil of tobacco, upas antiar, the woorara, and some other poisons, tends specially to paralyze the central organ of the circulation, and, like these, ultimately to produce what Bichat termed "*Death by the heart.*"

8. That the remedies for the paralyzing influence of lead may be divided into two classes: *Disinfectants*, such as the iodide of potassium, and preparations of sulphur; and *Antiparalytics*, such as strychnia and electricity; that the best treatment combines these two elements; and that, on the whole, the most convenient and efficacious are free doses of the iodide of potassium, and minute proportions of strychnia or nux vomica.

9. That the above conclusions are founded mainly on the evidence of ten cases, principally among the badly nourished and improvident poor finally resorting to public institutions; and they may possibly be somewhat modified in future by more extended observations in private and more favourable practice.

Topical Use of Calomel in Fistula in Ano.—Dr. J. J. Williams, of Sommerville, Tenn., reports (*New Orleans Med. and Surg. Journal*, Nov. 1855), a case of complete fistula in ano, which resisted injections of tincture of iodine, solutions of nitrate of silver, sulphate of copper, of zinc, &c., and which was cured by the introduction of calomel into the sinus. The calomel was inserted into a small tube which was afterwards carried to the bottom of the fistula, and there the calomel was pressed out by means of a piston. In this way he filled the fistula full daily. In a short time a cure was effected.

Cæsarian Section.—Dr. D. F. Owen reports (*Charleston Medical Journal*, March, 1856) a case in which the Cæsarian section was performed by Dr. W. H. Merinar, of Miss., for the third time on the same individual. A living male child was extracted. The mother died on the fifth day after the operation.

Mastodon Giganteus.—We take great pleasure in announcing that a second edition of Prof. J. C. Warren's magnificent work on the *Mastodon Giganteus* of North America has been published. This edition is materially enlarged, and has three additional plates, one of which contains a representation of the skeleton of the Mastodon Angustideus, discovered near Turin. Dr. Warren has given the most complete description of this gigantic extinct mammal ever prepared, and his work is alike honourable to the zeal and liberality of the illustrious and venerable author, and creditable to American science.

New Works preparing for Publication.—We are pleased to be enabled to announce that Dr. Carpenter has at length completed his long-promised treatise on the Microscope, and that an American edition will be issued, with the author's sanction, in a few weeks. His previous labours furnish us the guarantee that it will prove an entirely satisfactory guide and text-book to the student.

Neligan's Atlas of Cutaneous Diseases, presenting a series of accurately finished coloured illustrations of the principal diseases of the skin, will also soon be published in a very handsome quarto volume.

AMERICAN MEDICAL ASSOCIATION.

The Ninth Annual Meeting of the American Medical Association will be held in the City of Detroit, Michigan, on Tuesday, May 6, 1856.

The secretaries of all societies and other bodies entitled to representation in the Association, are requested to forward to the undersigned correct lists of their respective delegations, *as soon as they may be appointed;* and it is earnestly desired by the Committee of Arrangements that the appointments be made at as early a period as possible.

The following extracts are from Article 2d of the Constitution:—

"Each local society shall have the privilege of sending to the Association one delegate for every ten of its regular resident members, and one for every additional fraction of more than half this number.

"The Faculty of every regularly constituted Medical College or chartered school of Medicine, shall have the privilege of sending two delegates. The professional staff of every chartered or municipal hospital, containing a hundred patients or more, shall have the privilege of sending two delegates; and every other permanently organized medical institution, of good standing, shall have the privilege of sending one delegate.

"Delegates, representing the Medical Staff of the United States Army and Navy, shall be appointed by the Chiefs of the Army and Navy Medical Bureau. The number of delegates so appointed shall be four from the army medical officers, and an equal number from the navy medical officers."

The latter clause, in relation to delegates from the army and navy, was adopted as an amendment to the Constitution, at the meeting of the Association held in New York, in May, 1853.

William Brodie, M. D., *Detroit, Mich.*,
One of the Secretaries.

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*** The meetings of the Association will be held in F~~re~~eman's Hall, at the corner of Jefferson Avenue and Randolph Street.

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GRADUATES OF JEFFERSON MEDICAL COLLEGE OF PHILADELPHIA,

MARCH, 1856.

At a Public Commencement, held on the 8th of March, 1856, the degree of DOCTOR OF MEDICINE was conferred on the following gentlemen by the HON. J. B. SUTHERLAND, President of the Institution; after which a Charge to the Graduates was delivered by PROFESSOR ROBERT M. HUSTON.

NAME.	STATE OR COUNTRY.	SUBJECT OF THESIS.
Alexander, Charles T.	Kentucky.	Eclampsia.
Allen, James M.	Alabama.	Scarlatina.
Anderson, D. R.	South Carolina.	Pneumonia.
Banks, John L.	Virginia.	Smallpox.
Baxter, John S.	Georgia.	The Shoulder Joint.
Beall, R. L.	North Carolina.	Pneumonia.
Beeler, George (M. D.)	Kentucky.	Typhoid Fever.
Bennett, J. W.	North Carolina.	Remittent Fever.
Bloxom, John H.	Alabama.	Diagnosis.
Boucher, James H.	New York.	Remittent Fever.
Bowen, Julius M.	New York.	Medicine.
Bower, Franklin H.	Pennsylvania.	Retentio Alvina.
Bowman, John Davis	Pennsylvania.	Acute Rheumatism.
Branch, John L.	Georgia.	Modus Operandi of Therapeutical Agents.
Brawner, Lucius W.	Georgia.	Colo-rectitis.
Brawner, William M.	Georgia.	Diarrhœa.
Brewster, T. Fort	Georgia.	The Heart.
Britton, George W.	New Jersey.	Responsibilities of the Young Physician.
Bruce, J. D.	North Carolina.	Constitutional Peculiarities of the Female.
Buck, Horatio B.	Maine.	Apoplexy.
Bunting, Ross R.	Pennsylvania.	Death.
Burroughs, Richard	Georgia.	Yellow Fever.
Burton, William H.	Virginia.	Relapsing Fever.
Butts, James A.	Georgia.	Scalds and Burns.
Byrd, W. B.	South Carolina.	Enteric Fever.
Cantrell, James Henry	Pennsylvania.	Hydrophobia.
Carlton, Henry H.	Georgia.	Hereditary Disease.
Carpenter, A. Jackson	Pennsylvania.	Uterine Hemorrhage.
Carswell, B. S.	Georgia.	Pleurodynia and Intercostal Neuralgia.
Casselberry, Jesse R.	Pennsylvania.	Eclampsia Gravidarum et Parturientium.
Chubb, Charles H.	Pennsylvania.	Anatomy of Diarthrodial Articulations.
Coad, Joseph R.	Pennsylvania.	Physiological Effects of Water.
Cochran, Henry King	Virginia.	Acute Pleurisy.
Cock, J. Walter	Texas.	Anæsthesia.
Cole, Lorenzo S.	Maine.	Entero-mesenteric Fever.
Collett, W. A.	North Carolina.	Typhoid Fever.
Cooper, Alfred M.	New Jersey.	Cataract.
Cotton, David B.	Ohio.	Placenta Prævia.
Crain, J. R.	Texas.	Scorbutus.
Crawford, William M.	Virginia.	Erysipelas.
Cropp, J. T.	Virginia.	Inguinal Hernia.
Crymes, A. C.	Alabama.	Diagnosis.
Cummiskey, James	Pennsylvania.	Auscultation and Percussion.
Cunning, Samuel R.	Georgia.	Acute Gastritis.
Dorsey, Frederic	Maryland.	Croup.
Dozier, Allen S.	South Carolina.	Menstruation.
Druet, John T.	Ohio.	Scarlatina.
Dulaney, Nathaniel T.	Tennessee.	Hysteria.
Dunglison, Richard J.	Pennsylvania.	Apnœa.
Espy, Kirk	Pennsylvania.	Delirium Tremens.
Etheridge, John H.	Georgia.	Scarlatina.
Eubank, William G.	Alabama.	Wounds.
Everett, P. Root	Ohio.	Intermittent Fever.
Farrar, George W.	Georgia.	Remittent Fever.
Fenn, M. B.	Alabama.	Reproduction.

NAME.	STATE OR COUNTRY.	SUBJECT OF THESIS.
Fisher, William	Virginia.	Arrestation of Traumatic Hemorrhage.
Foote, George A.	North Carolina.	Typhoid Fever.
Foote, W. W.	North Carolina.	Primary Cause of Disease.
Freeman, Ingraham B.	Nova Scotia.	Fracture.
Garland, Wilson	North Carolina.	Entero-mesenteric Fever.
Garnett, Algernon S. (M. D.)	Virginia.	Animal Heat.
Ghent, Henry C.	Alabama.	Digestion.
Gibson, John J.	Illinois.	Milk-Sickness.
Good, Samuel M.	Maryland.	Epilepsy.
Goodall, C. Parke	Virginia.	Typhoid Fever.
Gordon, David C.	Mississippi.	Dysentery.
Gorgas, Albert C.	Pennsylvania.	Anæmia.
Grant, William L.	Virginia.	Puerperal Fever.
Green, Bennett W. (M. D.)	Virginia.	Inguinal Hernia.
Greene, J. M.	Alabama.	Fecundation and Conception.
Gresham, Henry	Virginia.	Vomissements Opiniâtres pendant la Grossesse.
Griesemer, John B.	Pennsylvania.	Pneumonia.
Haley, James	Mississippi.	The Profession.
Halley, H. Joseph	Virginia.	Theory of Inflammation.
Hammond, J. W.	Ohio.	Scarlatina.
Hanna, E. S.	Ohio.	Puerperal Peritonitis.
Hardesty, J. R. L.	Virginia.	Aneurism.
Hardy, William B.	Missouri.	Angeioleucitis.
Harnish, Tobias	Pennsylvania.	Chemistry of Fire.
Harris, Richard M.	Alabama.	Entero-mesenteric Fever.
Hathaway, Joseph Cushman	Massachusetts.	Cynanche Laryngea.
Herron, Levi B.	Tennessee.	Entero-mesenteric Fever.
Hickerson, James	North Carolina.	Remittent Fever.
Hildreth, Isaac F.	Ohio.	Inflammation of the Os and Cervix Uteri.
Hill, John	Ohio.	Secondary Treatment.
Hill, William	Illinois.	Dysentery.
Hinkson, John F.	Barbadoes.	Tetanus.
Hobson, George Fearn	Mississippi.	Yellow Fever.
Hoey, James W.	Pennsylvania.	Circulation of the Blood.
Holman, J. C.	Georgia.	Inflammation.
Homet, Volney	Pennsylvania.	Erysipelas.
Hooper, Philo O.	Arkansas.	Gunshot Wounds.
Hough, Thomas L.	New Jersey.	Papaver Somniferum.
Howe, William R.	Pennsylvania.	Intermittent Fever.
Hubbell, S. J.	Virginia.	Cynanche Trachealis.
Hudders, George W.	Pennsylvania.	Acute Dysentery.
Humphreys, George H.	Pennsylvania.	Fracture of the Forearm.
Humphreys, James P.	Tennessee.	Uterine Displacements.
Hunt, J. Spafford (M. D.)	Illinois.	Requisites for Medical Success.
Huntley, Oscar Hamilton	New Hampshire.	Metamorphosis of Tissue.
James, Jesse Y.	Pennsylvania.	Dysentery.
Jenkins, John F.	Georgia.	Scarlatina.
Jennings, Napoleon B.	New Jersey.	Acute Gastritis.
Johns, Lynch D.	Virginia.	Influence of Ergot on the Uterus.
Johnson, Joe H.	Georgia.	Dysentery.
Johnson, John D.	Virginia.	Acute Peritonitis.
Jones, R. R.	Virginia.	Circumstances which modify Therapeutical Indications.
Jones, U. R.	Alabama.	General Dropsy.
Jordan, William F.	Alabama.	Entero-mesenteric Fever.
Keating, John L.	Georgia.	Hysteria.
Key, Thomas T.	Georgia.	Scarlatina.
Kibler, Benjamin H.	Virginia.	Cholera Infantum.
Lanier, J. D.	Alabama.	Puerperal Fever.
Laughlin, J. H.	Ohio.	Entero-mesenteric Fever.
Lawson, H. M.	Georgia.	Gunshot Wounds.
Lazzell, James M.	Virginia.	Contagion of Typhoid Fever.
Le Hardy de Beaulieu, J. C.	Georgia.	Generation.
Lewis, Robert S.	Virginia.	Case of Erysipelas treated by him in 1855.

NAME.	STATE OR COUNTRY.	SUBJECT OF THESIS.
Long, Solomon	North Carolina.	Amenorrhœa.
Longsdorf, W. Harry	Pennsylvania.	Gunshot Wounds.
Love, John S.	Pennsylvania.	The Physician's Mission.
Lumpkin, James M.	Georgia.	Antiperiodic Agents.
Lunn, Lewis Thomas	Ohio.	Latent Pneumonia.
Malone, Joseph H.	Georgia.	Scarlatina.
Marbourg, J. L.	Pennsylvania.	Medical Botany of Indigenous Herbs.
Mathews, Thomas P.	Virginia.	Mania a Potu.
May, David F.	Virginia.	Variola.
May, John W.	North Carolina.	Acute Dysentery.
McCartney, J. S.	Pennsylvania.	Neuralgia.
McChesney, Robert Aurelius	Virginia.	Inguinal Hernia.
McClellan, Ely	Pennsylvania.	Loose Cartilages in Joints.
McClintic, H. D.	Virginia.	Emetics.
McCollester, John Q. A.	New Hampshire.	Delirium Tremens.
McGlaughlin, Charles C.	Pennsylvania.	Scarlatina.
McKethan, J. C.	North Carolina.	Spermatorrhœa.
McKneely, J. F.	Louisiana.	Scarlatina.
McLeod, Alexander	Alabama.	Scarlatina.
McMahan, R. W.	Ohio.	Epidemic Cholera.
McMullen, Thomas	Pennsylvania.	Amenorrhœa Suppressionis.
McNair, F. L.	Georgia.	Acute Peritonitis.
McNeil, Bernard A.	Pennsylvania.	Physiology of Digestion.
Mease, Levi A. (M. D.)	Illinois.	Nigrities Ossium.
Miller, Samuel P. H.	Virginia.	Amenorrhœa.
Mitchell, J. W.	Pennsylvania.	Scarlatina.
Mobley, Samuel Goode,	South Carolina.	Dysentery.
Moffett, Charles J.	Georgia.	Cirsocele.
Moore, J. Boardman	Virginia.	Anæsthetics.
Nash, J.	Virginia.	The Periosteum.
Nebinger, A. R.	Pennsylvania.	Scarlatina.
Nottingham, Southey S.	Virginia.	Diagnosis between Typhoid and Typhus Fevers.
Nunn, William C.	Virginia.	Vis Medicatrix Naturæ.
Pancoast, William H.	Pennsylvania.	The removal of Articular Cartilages from the Surfaces of Diseased Joints.
Park, Frank	Alabama.	Gunshot Wounds.
Patterson, Samuel D.	Pennsylvania.	Amputation.
Payn, Frederick G.	New York.	Porrigo Scutulata.
Perry, Joseph W.	Alabama.	Inflammation.
Philson, C. F.	South Carolina.	Menstruation.
Phister, Benjamin, Jr.	Pennsylvania.	The Language of the Tissues.
Pim, Louis T. (M. D.)	Missouri.	(Ad eundem.)
Prall, Claudius R.	New Jersey.	Typhoid Fever.
Pryor, William T.	Tennessee.	Puerperal Peritonitis.
Reber, Charles T.	Pennsylvania	Laryngitis.
Reeves, Samuel	North Carolina.	Intermittent Fever.
Richardson, John M.	North Carolina.	Dysentery.
Richardson, Moses	Georgia.	Dysentery.
Rihl, Jacob L.	Pennsylvania.	Pneumonia.
Robertson, R. M.	Alabama.	Case of Gunshot Wound of the Sacrum treated by him.
Robertson, William S.	Iowa.	Typhoid Fever.
Robinson, Henry C.	North Carolina.	Fever.
Rutherford, Alexander D.	Pennsylvania.	Variola.
Sabine, Andrew	Ohio.	Milk Sickness.
Sankey, J. W.	Pennsylvania.	Chronic Gastritis.
Savidge, Aaron Raker	Pennsylvania.	Parotitis.
Saxon, C. A.	South Carolina.	Hernia.
Sayle, Robert	Tennessee.	Lobar Pneumonia.
Schively, George P.	Pennsylvania.	Rubeola.
Scott, J. Turner	Mississippi.	Epidemic Cholera.
Scott, Robert	Florida.	Pneumonia.
Selfridge, James M. (M. D.)	New York.	An undescribed Medicinal application of Cubebs.
Semple, James	Virginia.	Stricture of the Male Urethra.
Shaw, Daniel	Texas.	Acute Gastritis.

NAME.	STATE OR COUNTRY.	SUBJECT OF THESIS.
Simpson, Thomas W.	Maryland.	Epidemic Dysentery as it prevailed in Frederick Co., Maryland, in 1854.
Smith, G. Selden	Illinois.	Scarlatina.
Smith, Hugh G	Kentucky.	Puerperal Fever.
Snead, John D.	Virginia.	Pneumonia.
Spencer, W.	Indiana.	The Periodical Diseases incident to the Wabash Valley.
Stanley, Augustin O.	Georgia.	Pneumonia.
St. Clair, W. P.	Kentucky.	Dysentery.
Sternberg, James Herkimer	New York.	Inflammation.
Stevenson, W. Morton	Indiana.	Intermittent Fever.
Stewart, Jordan	Pennsylvania.	Therapeutic Action of Arsenic.
Strudwick, James W.	Alabama.	Intermittent Fever.
Stuckslager, Cyrus R.	Tennessee.	The Young Physician.
Sturdevant, S. Burton	Pennsylvania.	Erysipelas.
Sullivan, John M.	Pennsylvania.	Inflammation.
Taylor, Joseph Sheppard	Virginia.	Yellow Fever.
Terrell, J. E. G. (M. D.)	Georgia.	Epidemic Typhoid Fever of Georgia in 1854–5.
Thomson, George K.	Pennsylvania.	Measles.
Torbet, George A.	Indiana	Epilepsy.
Trout, William F.	Pennsylvania.	Hygiene of Young Females.
Tucker, John A.	Georgia.	Autumnal Remittent Fever.
Tucker, William D.	Tennessee.	Fœtal Circulation.
Tupman, P. M.	Virginia.	Opium, its varieties, &c.
Van Horne, Augustus K.	Illinois.	Congestive Intermittent Fever.
Watson, John W.	South Carolina.	Epidemic Dysentery as it prevailed in South Carolina in 1853–4.
Watt, William	Texas.	Acute Pneumonia.
Weatherly, W. E.	Mississippi.	Strabismus.
Whitmire, James S. (M. D.)	Illinois.	The Agency of New Alkaloids in the treatment of Intermittent Fever.
Williams, Thomas F. J.	Virginia.	Dysentery.
Williamson, William T.	Delaware.	Typhoid Fever.
Wills, Alexander F.	Virginia.	Chronic Gastritis.
Wills, James L.	Virginia.	Acute Pneumonia.
Winchester, Edgar (M. D.)	Illinois.	Fractures.
Yates, T. Wesley (M. D.)	Mississippi.	Puerperal Fever.
Young, Henry N.	Mississippi.	Yellow Fever.

Total 215.

ROBLEY DUNGLISON, *Dean.*

UNIVERSITY OF LOUISIANA, MEDICAL DEPARTMENT.

The Annual Course of Lectures in this department will commence on Monday, November 19, 1855, and will terminate in the ensuing March.

James Jones, M. D.,	Professor of Practice of Medicine.
J. L. Riddell, M. D,	Professor of Chemistry.
Warren Stone, M. D.,	Professor of Surgery.
A. H. Cenas, M. D.,	Professor of Obstetrics.
A. J. Wedderburn, M. D.,	Professor of Anatomy.
Gustavus A. Nott, M. D.,	Professor of Materia Medica.
Thomas Hunt, M. D.,	Professor of Physiology and Pathology.
Cornelius Beard, M. D., Samuel Choppin, M. D.,	Demonstrators of Anatomy.

The rooms for Dissecting will be open on the third Monday in October.

The Faculty are Visiting Physicians and Surgeons of the Charity Hospital, and attend this Institution from November to April.

The Students accompany the Professors in their visits, and, free of expense, enjoy extraordinary practical advantages.

There are, during the Session, about eight hundred persons prescribed for daily.

In 1854, the number of patients was thirteen thousand one hundred and ninety-two.

THOMAS HUNT, M. D., *Dean.*

The Administrators of the Charity Hospital elect annually, in April, fourteen resident students, who are maintained by the Institution.

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UNIVERSITY OF LOUISIANA, MEDICAL DEPARTMENT

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